Price: £1.95

ST APPLICATIONS

The Magazine for Users of Atari ST, STE, Falcon and TT Computers — *Issue No. 31, July 1993*

THIS MONTH

Reviews

- Falcon 030
- X-Debug
- Diamond Edge
- Plus Cache ST
- TOS 2.06 T_Board

Articles

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- Beginners' Forum
- In Control
- Drawing Outline Fonts
- First Word Plus Utilities

Regulars

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- CAD Column
- STicks and STones
- Desktop Discussions
- Programmers' Forum
- Going On-Line
- Forum
- Grafix Arts
- PD Update v13.4

Printed in the U.K.

TOS 2

Paul Rossiter looks at the pros and cons of installing Compo's TOS 2 T_Board in an STFM, and gives readers a few tips on soldering should they decide to 'do it themselves'.

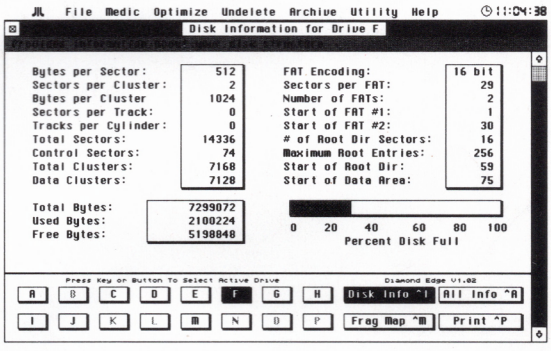
T_Board

Falcon 030

Piper learns how to fly Atari's new machine, giving his first impressions of the operating system and the various display options. He also tries out some ST software, both serious applications and games, to test for compatibility.

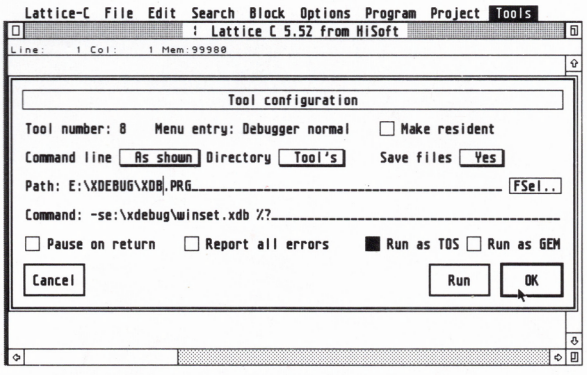
Diamond Edge

Michael Baxter analyses HiSoft's quest for supremacy in the field of ST disk utilities, Diamond Edge from Oregon Research Associates, and concludes that professional users would be insane not to have a copy.



X-Debug

Lattice C users finally get a source level debugger. X-Debug is a high-level programmer's alternative to MONST2C, and Mark Baines lets out a huge sigh of relief not only for its long-last availability (and affordability) but also for its ease of use and stability.



FWP Revisited!

Sam Marshall examines how 'this old Bagpus' of a word processer may benefit from a range of supporting utilities such as RAMdisks, indexers and print facilities to enhance and expand its performance.

Imagecopy 2

Image utility for Atari ST/TT/Falcon computers

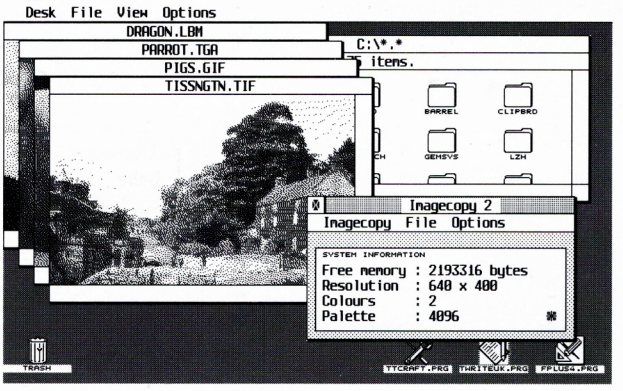
Copy images from screen in any ST/TT/Falcon video mode. Images can be copied by pressing Alt-Help, and a flexible rubber-banding system allows images to be selected with a fine degree of accuracy.

Display images in any ST/TT/Falcon video mode. Colour-mapping and dithering is used to display images in video modes which contain fewer colours. Several images may be displayed simultaneously in GEM-window or full-screen display modes.

Print images and screen dumps in black and white or colour on a wide range of printers, including 9-pin and 24-pin dot-matrix printers, Bubblejet printers, Deskjet, and Laserjet printers. Imagecopy 2 offers print-scaling, variable-sized halftones (up to 16x16) for realistic colour depth, and comprehensive colour controls, and is able to print images containing up to sixteen million different colours (24-bit true-colour). Print-colour options include: monochrome, CMY colour, CMYK colour, CMY separation, and CMYK separation. Colour separation modes can be used to print full-colour images on a monochrome printer.

Convert images between different formats (see next paragraph).

Extensive range of image formats: Imagecopy reads the following formats: TIFF, Targa, IMG, extended IMG, DEGAS,



Neochrome, Art Director, Tiny, GIF, Spectrum, IFF/Deluxe Paint, Windows bitmap, OS/2 bitmap, PC Paintbrush (PCX), and Macpaint. Images can be saved in the following formats: TIFF, Targa, extended IMG, DEGAS, and RSC. TIFF support includes baseline TIFF apart from Huffman compression (uncommon), common extensions such as LZW compression, and the ability to read non-standard TIFF images produced by ST programs such as Retouche. The ability to print TIFF files allows Imagecopy 2 to be used as a print program with True Paint.

User-friendly GEM interface, including window menu bar, pop-up menus, colour sliders. Can be used as an accessory or stand-alone program.

Price - £19.95
Upgrades: from Imagecopy v1 - £10.00; from Imagecopy Colour - £5.00.
Return master disk only.

The ST Club
2 Broadway
Nottingham
NG1 1PS
Phone (0602) 410241

X-Debug

Advanced Debugger for Atari ST/TT computers

X-Debug is an advanced debugger for the Atari range of computers. It is both a low-level debugger, showing memory dumps and register contents, and also a medium-level debugger, understanding about certain high-level languages and allowing source display single-step, and local variable access, for example.

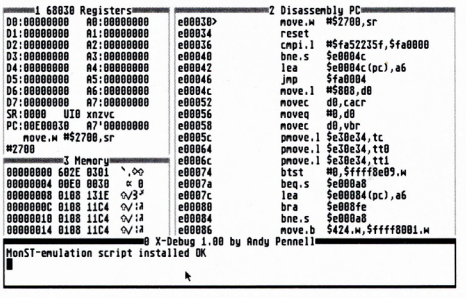
The best support is for Lattice C, as that is the only compiled language that outputs full debug information, but it also supports line-number debug (as created by HiSoft Basic and Devpac 3), and symbol-only debug (usable with virtually all ST compilers).

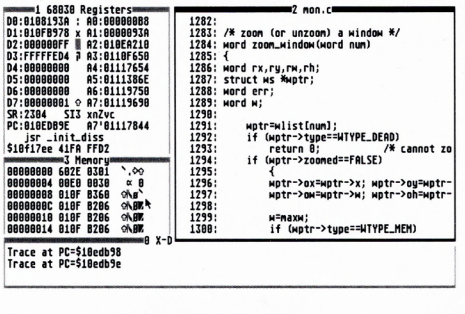
Crucial to the whole debugger is the X-Debug language. This is a simple yet powerful script type language that allows complex operations to be built up from a sequence of standard operations. It supports a full expression evaluator, aliases, and procedures with parameters. It is also an important factor in customising the user interface, allowing specific commands to be attached to particular keypresses.

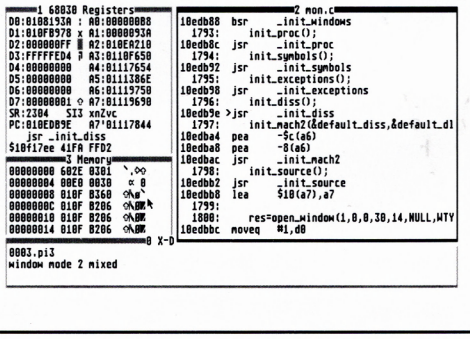
X-Debug runs on STs and TTs with any monitor type. One megabyte of RAM is recommended, and TOS 1.4 or later avoids problems with larger programs. Written by Andy Pennell, the creater of MonST.

£24.95

The ST Club
2 Broadway
Nottingham
NG1 1PS







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Contributions

The articles in *ST Applications* are written by users for users. Everyone reading this magazine will have something to contribute; even if you do not feel able to do a full-length review or article there is the Forum section for short hints, tips and questions. If you are interested in writing for *ST Applications* - regularly or irregularly - please write for a copy of our terms and conditions. We always do our best to reward quality work with appropriate remuneration.

More Art Packages For The Falcon

There are two very interesting art packages being developed for the Falcon. The first is **AutoDesk Animator**, the standard professional animation tool on the PC. The PC version creates FLC animations in 256 colours and it is unclear as yet whether or not this will be extended to true colour support on the Falcon. It is not known whether the product is 'merely' AutoDesk Animator or the high end AutoDesk Animator Pro. In either case, it seems set to make a major impact on the market.

The second package is **Photo Studio** from *Euro-Soft*. It is a fully fledged art package capable of creating and editing almost everything from Degas PI1s to true colour 24-bit graphics. It even supports the format used in Kodak's Photo-CD players. Regrettably I haven't any details as to availability or price in this country as yet.

Atari News

Falcon Flying High

The Falcon 030 is proving popular since its official launch in March. Trade distributors SDL have reported the machine as selling well and I've even heard unconfirmed reports that they were completely sold out for a period during April. Andy Leaning of Silica Systems (the retail outlet of SDL) recently stated that there had been an increase in sales of ST software since the release of the Falcon. He attributed this to ST owners buying Falcons and selling their STs to first time buyers, who are in turn purchasing software for the machine. He expects that the £159 STFM will further boost software sales. Reports from other sources suggest that the Falcon is selling well through independent retailers, with one instance of a small retailer buying in a dozen machines and being sold out within a week. What's even more surprising is that all the Falcons on sale at the moment are 4 Meg machines! Despite advertisements to the contrary, the 1 Meg machine does not exist. My suspicion is that it will not make an appearance at all and that the base model will have 2 Meg fitted as standard, like the Amiga A1200. If this were to be the case and the price came down to a realistic level, Atari could well re-establish themselves.

Darryl Still, Atari UK's Marketing Manager, has confirmed what has been rumoured for some time now. The Falcon is to appear in its new casing later this month. He has not made any comment on pricing as yet, for obvious reasons, but it is expected that a substantial price cut is imminent across the range. Atari expect to sell at least 150,000 Falcons this year.

Independent Retailers Back Atari

Ultimate Computer Centres, a recently formed organisation for independent computer software and hardware retailers, have given their support to their first hardware manufacturer, Atari. The organisation hope to represent at least 200 stores by mid Summer. This latest move will result in Atari machines becoming available through many more specialist retailers in the coming months.

Multi-TOS At Last!

Multi-TOS was due to be released on 22nd May and should be available as you read this. The current version is v1.0 and is supplied complete with an installation utility. It will run on any ST/STE/TT or Falcon but requires a machine with at least 2 megabytes of memory and a hard drive. Early reports indicated a UK price tag of £29.95 but this was unconfirmed as we went to press.

Central Distribution Centre For Europe

Atari Corporation have set up a new European distribution centre in Vianen, Holland. It has come about in response to the EC's lifting of customs barriers between member nations at the end of last year. The result is that goods may be moved within the EC both faster (without border control) and cheaper (without import duty being applied at each border crossing). Holland has been chosen owing to its central location within Europe combined with Schipol Airport's freeport status and its inland waterways giving access to most European countries. The new distribution centre is designed to improve national support through shorter response times and improved inventory control. A new information system has been installed which gives management immediate access to accurate inventory levels throughout Europe. This should help prevent the shortages which seem to occur around Christmas ever year!

Read_Me 1st

Subscription Expired? If you received this copy of *ST Applications* through the post, check the first line of your address label carefully: if it reads **STA31**, then your subscription has expired with this issue; if the information line reads "Complimentary Copy" you have been sent a free evaluation copy of *ST Applications*. Either way, you must take out a new subscription in order to receive further issues.

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Advertising

There is a limited amount of space for commercial advertising in each issue of *ST Applications*. Contact Nicky Wilson on 0602-410241 for further details and to request a media-pack. Subscribers can place free classified advertisements - see page 57 for details.

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12 issues + 6 D/Mags :	£30.50	£38.50

Subscription and Order form will be found on page 57.

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Worldwide Magazines, Unit 19, Chelmsley Wood Ind. Est., Waterloo Avenue, Chelmsley Wood, Birmingham B37 8QD. Tel: 021 788 3112; Fax: 021 788 1272.

Canadian office: Tel: 519 539 0200; Fax: 519 539 9725.

Contact us for details of your nearest *ST Applications* stockist.

Disk Mags

These are bi-monthly compilations of the best PD software to come to our attention in the preceding couple of months - not magazines on disk. The next Disk Mag, DMG.36, will be dispatched a few days after issue 32 is sent out.

Genlock From Titan Designs

Titan Designs have recently announced the availability of two genlock devices, one for the budget market and the other for the professional user. The budget release is called **Graffiti** and will cost somewhere between £100 and £150. It allows a number of special effects to be utilised and text can be imported in the form of Calamus, Didot or PostScript fonts. Although designed primarily for use with the Falcon, especially in true colour mode, Graffiti can be used on the STE with a special adaptor.

The professional package is Falcon specific and is called **Fresco.** It will cost £299 and has all the features of Graffiti as well as some extra special effects and real time 3D text and object manipulation in any of the Falcon's resolutions. For more information on either product contact *Titan Designs Ltd,* 6 Witherford Way, Birmingham B29 4AX; Tel: (021) 414 1630.

Migraph OCR Now Available

Golden Image have recently added **Migraph OCR** and Migraph's **Junior OCR** to their line up. In fact the Junior version is being offered in a bundled deal with their own hand-held scanners. The software is compatible with Migraph, AlphaData and Golden Image hand scanners and automatically recognises over twenty of the most popular typefaces. New ones can be added easily. It employs the use of Omnifont technology, currently the leading edge in OCR processing. This method involves storing mathematical definitions for the characters rather than raster images. As well as the supported scanners, Migraph OCR can load IMG or TIFF files saved by other hand held or flatbed scanners. It ordinarily recognises text in point sizes from 10-18 points but can handle smaller sizes if scanned at 400 dpi. Questionable characters are handled by linguistic databases (lexicons) which check the syntax of the text and make an educated guess.

Another new software package, Merge It, is being bundled with all Golden Image hand scanners. It allows you to merge two scans together from your hand-held scanner to create an A4-width scan without going to the expense of a flatbed scanner. Currently Golden Image are offering their hand held scanner with Touch Up v1.8 and Merge It for £149 or the same bundle but with Junior OCR included at £199. Junior OCR is available on its own for £75 and the full version which is compatible with most scanners costs £165. Please note the OCR software requires at least 2 Megabytes of memory and a hard drive. For further details contact *Golden Image (UK) Ltd,* Unit 12a Millmead Business Centre, Millmead Road, London N17 9QU; Tel: (081) 365 1102; Fax: (081) 801 8356.

Line Up Your RGBs

Line Up is the latest Shareware release from Charles Edwards. It provides a software correction for hardware faults inherent in almost all video recorders. The program came about as a result of a letter in issue 18 of ST Applications, which led the author to thinking that he was not the only person having problems with vertically misaligned RGBs.

The problem is that most video recorders do not have a stable enough pause facility for grabbing identical red, green and blue components of the same frame. Generally the picture jumps a fraction between the grabbing of frames, resulting in blurred images when the red, green and blue snapshots are merged together. Line Up loads in all three component parts, then displays the red and green frames on screen and allows tou to line them up against each other manually. You then line up the resulting image against the blue grab. The result is saved to disk as three new RGB frames which can be recombined using Vidi RGB, Video Master or Photo-Chrome.

Although the results of Line Up are most noticeable, the registered version (currently Line Up 3) allows the user even more control over the process. It lets you zoom the display to improve accuracy and includes the smudging out of underlap areas as well as numerous other features. The unregistered version is available for £1.45 from *The ST Club* and registration is a mere fiver.

News In Brief

PageStream 3 On Hold

Soft Logik have confirmed that they do not expect to release PageStream v3.0 for the ST. The Amiga version is almost complete and some work has been done on the ST version. However, Soft Logik feel that they cannot justify any more work on the project in view of poor sales of the current version on the ST. I am led to believe that the only thing which would persuade them to change their minds would be a revitalisation of software sales as a result of the recent launch of the Falcon.

Problems At The Top?

After less than a year in the job, Kelly Sumner recently announced his departure as Managing Director of Commodore UK to join US console publisher Gametek, as head of European operations. With no clear successor in sight, Commodore have appointed David Pleasance and Colin Proudfoot as joint Managing Directors. Meanwhile in The States, the parent company posted first quarter losses of over $77 million.

Lexicor Finds UK Distributor

Lexicor Software have recently appointed 16/32 Systems as UK distributors for their entire range of software packages. Their current lineup includes Chronos 3D at £159, Xenomorph at £79 and Phase 4 (comprising Chronos 3D, Cyber Sculpt, Prism Render 24 and Prism Paint) at £280. Contact 16/32 Systems on 0634 710788.

Queen's Award To Psygnosis

Liverpool based software house Psygnosis have just become the first computer software developer to receive the Queen's Award for Export. Since setting up in 1984, their name has been associated with high quality software on the ST, Amiga and PC. In the last three years their workforce has tripled and they now have offices in North America, Japan and Australia, with exports to these countries having quadrupled in the same period. Revenue from Japan and America accounted for over 40% of their turnover for the financial year 1991-1992 and this is expected to be closer to 50% in 1992-1993.

HP Announce Three Newcomers

Hewlett Packard have recently cut the cost of their entry level bubblejet printer, the HP DeskJet 500, to £249. This puts it in fierce competition against Canon's and Star's offerings. Its replacement, the HP DeskJet 510, comes in at £329 and has a variety of built-in fonts, prints at up to three pages per minute and uses greyscales to represent colours. The HP DeskJet 1200C is a top of the range colour printer costing £1389, which supports text output at a resolution of 600x300 and graphics at 300dpi. It includes 45 scalable typefaces and has PostScript level 2 compatibility as an optional extra. The third and final model is the HP LaserJet 4L at £649. It is a cost effective laser printer with 26 scalable fonts and printing speeds of up to four pages per minute. It uses HP's PCL 5 language and comes with 1 Megabyte of memory as standard.

Windmill Rumourmill

There is a strange and unattributable rumour currently doing the rounds suggesting that as well as moving Atari UK's distribution functions to the new plant in Holland, all of the other work currently done in the UK will also be moved to Vianen in Holland. Odder still is a suggestion from Holland that the re-re-re-launched Falcon will spurn the title computer and be pushed forward as a 'home entertainment unit' in a CDTV-like black box.

VIEW

Replace the Desktop's *Show File* function with a far more powerful one! Chock-full of features, **View II** is one utility you won't want to do without.

- View text files with bi-directional mouse scrolling, fast search, and screen or file print options.
- View picture files (sixteen different kinds) in colour *or* mono. Converts colour to mono or vice versa. View STe pictures on a regular ST, too!
- View (and extract) ARC and LZH files, even "lh5"-compressed LHarc files.
- Play digitized sounds through ST or STe hardware at any speed from 5KHz to 30KHz, even through DMA hardware!
- View SEQ and DLT animations, even if you don't have enough memory!
- Works with all TOS versions, on the Falcon030 and with NeoDesk 3!
- Takes *no memory* when installed on a hard drive. When installed in RAM, it takes 48K *or less*!
- Includes a custom, high-speed RAM disk and a reset-proof clock setter!
- All viewer programs written in 100% assembly for high speed and small size.
- We couldn't find a program that wouldn't work with View II installed; and we tried a lot!
- Supplied with comprehensive printed manual.

So why settle for plain-vanilla text file display? Add some real muscle to your Desktop with **View II**!

Price: £14.95

Written in the USA by: dmj software

The ST Club
2 Broadway
Nottingham
NG1 1PS
Phone (0602) 410241

Imagecopy 2 Out Now

The ST Club have recently upgraded their popular graphics utility **Imagecopy** to version 2. It is now possible to copy images from screen in any ST, TT or Falcon resolution, including true colour. Although the program is at its best in the higher resolutions available on the Falcon, it makes extensive use of colour mapping and dithering to reproduce the graphics in resolutions with fewer colours. Several images can be displayed simultaneously using multiple GEM windows and a flexible rubber banding system allows images to be selected with a fine degree of accuracy. Imagecopy 2 reads pictures in TIFF, IMG, X-IMG (colour IMG), Degas, Neochrome, Art Director, Tiny, GIF, Targa, Spectrum 512, IFF, Windows Bitmap, OS/2 Bitmap, PCX and Macpaint formats. These can be saved out as TIFF, Targa, X-IMG, Degas or RSC files. TIFF support includes the commonest extensions as well some of the non-standard versions saved out by Retouche and some other ST packages.

Printout is supported in colour or black and white, to most 9-pin and 24-pin printers as well as DeskJet, BubbleJet and LaserJet printers. Variable sized half tones are used for realistic colour depth and Imagecopy 2 can even print 24-bit true colour images. CMY and CMYK colour separation are also supported. Imagecopy 2 runs as a stand alone program or a desk accessory, making it ideal for use as a print program from within HiSoft's True Paint. Imagecopy 2 is available now and costs £19.95. Upgrades are available from Imagecopy 1 for £10.00 and Imagecopy Colour for £5. To order your copy or for further details contact

The ST Club,
2 Broadway,
Nottingham NG1 1PS;
Tel: (0602) 410241;
Fax: (0602) 241515.

All Formats Computer Fairs

For the last couple of years, "All Formats" computer fairs (hereafter AFCF) have been holding events as often as seven times a month in various conference centres, city halls and universities around the country. The appeal of these fairs is that they offer a pretty comprehensive coverage of Britain - in contrast to the annoying Southern bias of many other computer events - so there's a good chance that one will will appear within a reasonable distance of your home town before too long. This article is based on fairs recently held in Edinburgh and Nottingham, and aims to give an idea of what a typical event is like.

I was initially very pleased to see that an AFCF was coming to town - I knew that these were unashamedly 'box shifting' affairs, so I didn't expect to be wowed by fancy demonstrations, but I was keen, all the same, to grab some bargains. As the name implies, anything and everything computerish is included, so I was also intrigued to see how ST support was surviving.

Step Right Up

Entry to a fair is £4, though £1 off vouchers (as printed in ST Applications) are plentiful - you hand over one and they give you two back for example. First impressions were not too good, as the scale of both fairs was pretty small - fewer than 20 stalls apiece - and despite the fairly plush surroundings of the Nottingham Conference Centre, the event still looked to be a rather shabby one. Several stalls, for example, were shifting old motherboards, monitors and so on, with rummage boxes for solder-fiends to snuffle through (only 50p for an Oric cassette cable!). "Bit like a computer car boot sale really," commented a woman next to me. Though, to be just, there were some more up-market traders too, one displaying alluring PC's running CD ROM applications for example.

Around half of the traders appeared at both the shows I went to - apparently there are often quite a few shows on around the country each weekend, which tends to dilute support. One dealer told me that a recent Cardiff show (not an AFCF one) had only five stalls "though that was a really good day as all the money was split between 5 of us". Trade seemed generally brisk - but at such a small event it's not tricky to look busy!

On the whole the ST makes a very minor appearance - indeed, the Edinburgh event had a much stronger Sinclair QL line-up! This seemed to be a local aberration as they did not appear in Nottingham, though even older 8-bit computers were pretty well represented with bargain software.

All Consuming

The bulk of the stalls concentrated on 'consumables': dust covers and disks, cables and labels and mouse mats galore. The show was a very good chance to stock up on various bits that always come in handy - DSDD floppy disks at £15 for 50, foam mouse mats for £1.50, DeskJet double refills for £11, disk boxes for £3.50 and so on. Some of the bulk disks sold actually contained programs - presumably surplus from software houses - 50 back-ups of the first disk of your favourite game for the really paranoid!

Other stalls had 'bargain' software deals - around 4 covered ST stuff, mainly games a year or more old. Again there were some good deals to be had - I couldn't resist a 'two for a fiver' offer and bought a few pieces that never quite made it as hits but were pretty good all the same (it may pay to flick through some old reviews beforehand if games are what you're after). These were all new and boxed - there were also some traders with unboxed games for as little as £2, all of which seemed legitimate copies and came with instructions. Hunting for 'serious' software, however, was a pretty grim pursuit. I saw a forlorn copy of 'First Mail' and that was about it.

"You a gamblin' man?"

Similarly, hardware deals for the ST owner were tricky to find - there were 256K SIMMs at £3 a piece and internal drives for £30, but that was about all. I would have been interested in buying a bubblejet printer, but only one company had brought some, and they were at an uncompetitive £200 - same price as Dixons with none of the security. Indeed, the issue of support if you buy a defective item is a tricky one - few of the traders were forthcoming about their identity, contact addresses and so on (for consumables it was strictly cash in hand - so much for a "lifetime replacement guarantee" on floppy disks!). Though legally you have the same rights as for a shop purchase, the convenience of buying at a fair is greatly undermined by the worry of a great deal of hassle if you end up with a dud. I was not reassured when I heard the sales pitch of one peripheral supplier when asked if he was sure a disk drive worked:

"You a gamblin' man, sir? You know, you pay your money and take a risk. If you lose, you still try it again, don't you?"

I think the gist was that you can still hope to come out on top, though the implications of "they still come back for more" were not the best slogan for customer support.

Basically, you expect low prices at these shows because of these perceived risks - an STE for £145 and Amiga A600's for £150 were much more like it!

PD Libraries

16/32 had a stall at the Edinburgh event and were selling back-issues of the American 'STart' magazine for £1.50 including disk. These are a generally very informative even now, though the programs on disk are a little outdated, and seeing the ST in its late-eighties prime can be rather depressing.

Another PD library that claimed to be a regular of these shows was 'Galaxy PD'. They offered a sadly uninspiring catalogue - I'd taken along 6 disks of PD to swap but couldn't find that many that I wanted to get in return. In the end I picked out a few demos which were duplicated as I waited - perturbingly without any verification (though as the disks I offered weren't checked either I thought this was fair enough).

When I tried the disks at home, not only did one not work, but it carried the Ghost virus too! Checking the other disks revealed three copies of the Green Goblin virus as well. Just to really make my day, my internal drive crunched and died before I could clean them. The temptation to blame Galaxy for this too was immeasurable. Fortunately this turned out to simply be a Post-it note embedded in my stepper motor - I've yet to hear of a strain of virus that not only writes silly messages to the screen but leaves them on little squares of paper too...

Conclusion

The AFCF's seem to be modest affairs. It may appear that most of this review has been listing prices, but a £3 entry fee, plus the cost of travelling to the show means you should be willing to buy quite a few items to make a visit worthwhile. Savings compared with mail-order prices, for example are small (with the possible exception of special hardware deals). However, it is a chance to stock up on miscellaneous computer bits, chat with some people about the death of the ST, and I did get a rather smart looking Slimpak disk box with a "BBC TV" logo on it!

Information

All Formats Computer Fairs are held at wekends year round - look for an advertisement giving dates and locations in ST Applications, or in the 'Events' section of the Computer column in Thursday's Guardian.

All run from 10 a.m. to 4 p.m. Entrance is £4 for adults, £2 for children.

Sam Marshall

VGA Monitors for the ST

Ladbroke Computing have recently announced a special cable which allows VGA and SVGA monitors to be connected to an ST. It allows the use of high resolution on mono or colour monitors, giving a slightly larger display area than the SM124. Overscan is also supported if your ST has had this modification fitted. Unfortunately you cannot use low or medium resolutions, even on a colour monitor. As VGA monitors haven't got speakers, the cable includes a beeper which relays keyboard clicks and system beeps. It also comes with a 3.5mm output jack for connecting to audio equipment. The cable itself costs £99.99 or it is available with a mono VGA monitor for £139.99. Contact *Ladbroke Computing*, 33 Ormskirk Road, Preston, Lancs PR1 2QP; Tel: (0772) 203166; Fax:(0772)561071.

Learning to Fly

Piper

Just so you don't have to wade all the way to the end before you know, here's the conclusion: Buy it. But since I get paid by the word, I won't just leave it there. Want to find out why you should buy it? Walk this way...

First Impressions

Unfortunately for all of us (not least Atari) this isn't a "Gosh wow!" machine at first sight. To look at, the Falcon is just an ST with stained keys, at least from the front. The keys do have a slightly better feel to them than my old ST, and they're quieter. Not much reason to buy a new machine.

Nipping around the back, we start to see some of the good bits. There's a SCSI II port so you can connect in to the industry standards rather than proprietary one-offs, and so have a wider choice and better price. The monitor connector's changed too. It won't connect to any monitor. But it will connect to the adaptor box you get with the machine to allow you to use most monitors, even VGA ones. A LAN port is sitting there looking like an RS422 output, just waiting for some software to use it so it can link up to any Local Area Networks. The Modem port has shrunk to fit in with RS232C standards, there's a stereo headphone socket and a stereo microphone socket. The printer port looks about the same, though. All nice, but still no reason to buy a new machine.

Oh, I almost forgot. There's a DSP port so you can get directly in touch with the Digital Signal Processor. That's where it starts to get interesting. Direct access to a 33MHz, 16MIPS engine used in up-market samplers? And it's not just sound it works with, but any digital information, and if asked nicely, it'll run as a parallel processor with the CPU.

The Falcon is due to come in different configurations, but at the moment there are few other than the 4Meg with hard drive version. That's what I've got here. Time to turn it on.

Desk Work

After not being terribly impressed with the case, I push the on switch and find... I'm not terribly impressed with the desktop either. It's a definite advance on the old one, having picked up a few lessons from NeoDesk and even having a few advances, but they're not very major. Windows now have a slight 3D to them, there are keyboard short-cuts for most options (you can even set up more for yourself), and there are more options to take advantage of the new features. But, despite what the ads say, it's an evolution, not a revolution.

One thing to note is the change in video modes. There are three buttons to let you use the old ST modes (low, medium and high), but there are also settings for Colour (2, 4, 16, 256, True Colour), Columns (40, 80) and, with the Atari adaptor, Interlace (a button to be avoided except in times of great need: it doubles the number of lines displayed, but causes flickering). On a colour monitor, this gives you medium resolution with true colour, nice but not that nice.

Take it to the Limits

I thought I needed something to convince me that this really was much better than my old machine. Enter the benchmarks. Interesting. It showed some nice go-faster stuff, some droolingly impressive go-faster stuff, and some mind-boggling go-slower stuff! What? It seems that, yet again, Atari have ignored the obvious, despite having it presented to them on a plate, with side salad and a group of flashing neon signs saying "This Way!". As we all know, the ST Club offers supplies of Warp 9 to anyone wanting to ditch the awful slow TOS text routines. This grew from the old Quick ST software, which itself went through a long contest with others offering similar improvements. The Falcon carefully avoids learning from these lessons, and with Quick Index shows a startling increase in CPU speed and manages to turn it into a slowdown in output. It must have taken a lot of planning to get that result.

I Keep Having Visions ...

Okay, how about trying out the software? That should cheer me up.

One small problem. The review machine with all the software on it went walkabout with the delivery company. Paul kindly arranged to send his own developers' machine so I'd have something to play with, but that doesn't have the software in it that will be coming with the machine. For one thing, it runs on TOS 4.01, and it appears that the lowest to hit the shops is 4.04. It doesn't have Speedo GDOS which will also be shipping out along with Works and various other bits. What it does have is something that I saw six months ago at ECTS, a programme called Japan, which displays various Japanese "photos". The pictures take up the whole screen, no borders at all, and are quite reasonable. But I wasn't really impressed with them then, and I'm still not. They don't quite look like photos. I've now seen the Falcon doing Photo CD stuff, and it's better. I don't know what's missing, but these aren't quite there.

I moved on to FSLIDE1 in the TONYDEMO folder. This was better, things started picking up. The program had the title screen of Moving Pixels which I'd already seen down at Atari last time I visited. Instead of just showing the photos/pictures, it presents them. It unrolled pictures, faded them in, replaced blocks of the screen until it built up the whole picture, again with no border. It still wasn't quite Photo CD quality, but this showed that the Falcon can actually manipulate this sort of data, not just dump it to the screen. Maybe the first sight of the DSP in action?

Then there was another program, which was already installed as an accessory: Imagecopy 2. You may already have Imagecopy. Think of how good it is. Multiply it by ten. Add a hundred. Multiply it by ten again. You're just getting into the region of how good Imagecopy 2 is. It had a whole series of images in different formats that it could show. I even asked it to show the pictures that I'd seen with Moving Pixels, and it happily com-

Video Adaptor

There are three different versions of this box, one of which will allow you to connect your old Atari monitors, another lets you plug in to a VGA monitor, and the third is a composite video adaptor with audio and video cable jacks. There's still the TV output so you can just wiggle an aerial at it and set up without a monitor, but if you've got a TV with SCART, the Atari adaptor will allow you to plug into that if you've got the old ST to SCART lead. With the VGA adaptor, you can call up all the old ST resolutions, including hi-res, but you're only allowed 256 colours rather than true colour.

plied, showing them in windows which I could move around as I wished. And it would do it in any resolution (with varying success; a True Colour photo shown on a hi-res mono screen is not recommended). It couldn't quite cope with the Japanese pictures, though.

Which brings me on to another program which was sitting around obediently on the root directory: OSCAN. This, I later found out, was written by Jeremy Hughes, who'd borrowed Paul's Falcon so he could work on Imagecopy 2 and had become irritated by the fact that Atari have left out the overscan mode from their video options, so he wrote a program which kicked it into overscan and left it on there when he shipped it over to me. This changed things. I'd not been impressed with the desktop since it was only a colourful medium resolution (unless you went into Flicker mode), but once you get it into overscan, it starts to look more professional. It jumps up from 640 to 768 pixels across, and that doesn't just mean you get a better looking desktop. Some programs can take advantage of the extra space (Protext, KSpread 3 and First Word Plus to name but three), which can make working easier, by allowing for more columns on screen with a spreadsheet, for instance. And, just when I was ready to be impressed, I got a delivery of the VGA adaptor and plugged in an SVGA monitor that I'd borrowed. With an SVGA monitor, you can have any ST mode, including hi-res, with the extra benefit of VGA mode (640 x 480), the same resolution as interlaced Atari mode, but without the flicker. The Interlace option disappears from the menu to be replaced by a Double Line option. Great. Not so great is that with this added clarity, you lose the option of True Colour. There's doubtless an excuse for this. It's not good enough. The monitor can display them, and the machine can create them: do better.

Since I'd been using overscan mode, I thought I'd try it out on the SVGA. Resolution goes up to 768 x 576, but you can't actually see the extra bits, they scoot off the screen, never to return. The SVGA screen can display 800 x 600 pixels, and there are ways for Atari to persuade it to do so. Why on earth don't they? Then, with the True Colour mode reinstated, you'd really have a HOT machine.

Software

The software was booted and run for a very short period. No claims for 100% accuracy.

Title	Status
Auto Route	OK
Calamus SL	OK+
Data Manager	OK+
Disc Doctor	OK
First Word Plus	OK+
GDOS	OK
GFA Basic	OK
GFA Draft	OK
KSpread 3	OK+
Knife ST	OK
NMB 1.2	OK
NeoDesk	OK
PageStream 2	OK
Protext	OK+
Quick Index 2	OK
Quick ST 3	Fail
Redacteur	Fail
STDCAT 5	OK
Signum	Fail
Stereo Replay	Fail
Superbase Personal	OK
Warp 9	Fail

Success around 70%

N.B. GDOS only ran after a lot of meddling. The new screen modes need to be added to the Assign.Sys file and you cannot have any comments in this file.

Title	Status
Action ST	Fail
Airball	Fail
Archipelagos	Fail
Balance of Power	OK
Barbarian (Psygnosis)	Fail
Battle Chess	OK
Bio Challenge	Fail
Bloodwych	Fail
Captive	Fail
Carrier Command	Fail
Chaos Strikes Back	OK
Chariots of Fire	Fail
Colorado	Fail
Corporation	Fail
Corruption	OK
Defender of the Crown	Fail
Déjà Vu	Fail
Déjà Vu II	OK
Dragon's Breath	OK
Drakkhen	Fail
Dungeon Master	OK
E-Motion	Fail
Elite	OK
F-19	Fail
Federation of Free Traders	Fail
Fish!	OK
Flight Simulator	OK
Galdregon's Domain	Fail
Gods	Fail
Goldrunner II	Fail
Gravity	Fail
Hollywood Hijinx	OK
Indiana Jones and Last Crusade	Fail
Interphase	Fail
Jinxter	OK
Joan of Arc	OK
King's Quest II	OK
Legend of the Sword	OK
Lemmings (demo)	OK
Midwinter	Fail
Myth	OK
Populous	Fail
Psion Chess	OK
Purple Saturn Day	Fail
Resolution 101	OK
Rocket Ranger	Fail
Sim City	Fail
Skweek	Fail
Sleeping Gods Lie	Fail
Spellbreaker	OK
Starglider	Fail
Tass Times	OK
The Kristal	Fail
The Secret of Monkey Island	OK
Time	OK
Time and Magic	Fail
Uninvited	Fail
Virtual Worlds	Fail
War in Middle Earth	OK
Wishbringer	OK
Wonderland	OK

Success around 40%

Are We Still Compatible?

By this time I was trying out some of my old programs to see whether or not they'd work with the Falcon.

On the serious side, most (70% of my limited selection) seem to be able to handle the Falcon as long as it's in ST resolution, some even take advantage of the extras. I'm currently writing with Protext on the SVGA in 640 x 480 mode with 16 colours available. Nice and clear.

Some surprise comes from the Atari staple GDOS. It wouldn't boot. This may be fixed by fiddling with the Assign.Sys file, but Atari forgot to include such minor information with the machine. It will finally be fixed with Speedo GDOS, but this is still not shipping. Very little surprise comes from the fact that Warp 9 and Quick ST don't work: they were always doing things not entirely approved of by Atari. Like making the ST work faster.

As far as games go, there's a less happy tale with around 40% running, but that makes it only slightly worse off than the Amiga 1200, which has just over 50% compatibility. It's nice to know I can still play chess and Dungeon Master. But Atari did warn us that it would only be "well-behaved" software that would run, and games don't usually fall into that class (remember the problems with STE compatibility?).

The MiNT with a Hole

After this small diversion of slogging through all my old software, I went back to the stuff that was sitting around on the Falcon disc. There was one folder called FREEBIES, so I took a quick poke around in that. I was very disappointed. There was an Arkanoid-genre breakout game which didn't work in all resolutions, there was a talking clock which just took over the whole screen with a small digital clock and every five minutes would

politely shout the time at you. I left and moved on, and later learned I'd made a big mistake.

Finally I decided to apply myself to MultiTOS. As you probably already know, this is Atari's multitasking environment which comes with the Falcon and is derived from the public domain program MiNT (MiNT is not TOS), which has been converted to, well, MiNT (MiNT is now TOS). Atari actually looked to the outside world and didn't just change their operating system so that it couldn't run. They learned. Maybe there is still hope for them.

After playing around with the setup for a while, I got the thing working and ran a program called LINES, which just draws some moving lines in patterns across the screen. With MultiTOS, it does it in a window, and you can then run it again in another window and both windows will carry on showing moving lines in patterns whilst you can get on with something else. And what I decided to get on with was going back to the talking clock. From MultiTOS, the clock just hangs in a corner of the screen and you can still get on with other things, like playing Breakout, which will also hang around in one part of the screen instead of taking it over. The clock still screams at you regularly, though. These programs seem to have been there more as a way of showing off MultiTOS than an end in themselves. MultiTOS isn't finished yet, there's still some tidying up to do, but it does seem to be well on its way. There's a slight difference between the menus, with MultiTOS not having the option to change resolution. This causes problems with the way that keyboard short-cuts are assigned, since the short-cut then moves to the next entry on the menu, a little confusing. MiNT with this machine is only version 0.97, not even getting as far as 1, which would be the expected minimum for the "finished" product. It's gone at least as far as 1.01 for the release machines. If the program does fix its minor niggles and it does get accepted by the software houses, it will make working life much more convenient as you'll be able to pull work from one program straight across into another. Neat idea.

Music, Maestro

Something that was missing from the machine I had was any music-related software. I've already seen some, such as the 4-track direct-to-disc recorder which I'd been hoping to be able to hear through my hi-fi, and have heard of 8-track offerings. The closest I was able to get with Paul's machine was the screaming clock. I've been in touch with D2D and should have seen them by the time you read this, and if I can get some demo software, I'll take it down to a friend's studio to try it out there. I'll let you know about it then.

Kick 'em while they're down

At various points during this article, I've been knocking Atari. They deserve it. Actually, they deserve worse, I was just feeling generous. They (the US version, that is) have, yet again, made a mess of things. Their TOS text routines are terrible. But Jeremy's overscan program made me think about it again. His program gets around their silliness over not including overscan as a menu option, and so someone else will doubtless come up with a way round their terrible text, maybe an updated Warp 9. They shouldn't have to, but it's a fairly obvious kludge for the problem. And that will leave us with a machine between 2.5 and 17 times faster than the one we've got now, already a tempting offer. It will have a MultiTOS environment to let you get on with lots of things at the same time, it will run a reasonable proportion of your old software. It will use a VGA monitor for greater stability of image, replacing your old hi-res monitor. It will use any industry standard devices which have SCSI or SCSI II, such as hard drives or CD ROMs. And it will have the DSP. Home studios where you can record at CD quality, add effects, bounce down with no loss or hiss. And maybe even build up a video to go with it.

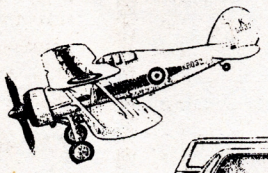
Put Your Money Where My Mouth Is

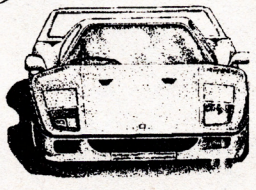
So far, the applications are limited. The machine I've got in front of me can't do very much. You're probably used to reviewers saying "this is great, you go and buy it". This is a bit different. I've been shown things the Falcon can do. It's got incredible potential. I've already got a 200Mb hard disc so I'm going to wait until the 4Mb version comes through without hard disc. Then I'm going to buy it. Convincing enough?

TypeWrite Clip Art

Sets 4 and 5

This is a series of high quality 300-dpi clip art professionally produced by the TypeWrite DTP bureau. In set 4 there are 62 images of Dogs, and in Set 5 there are 74 images of Classic Aircraft and Cars. The associated catalogue shows all of the images in sets 4 and 5, printed full size, together with the file name and disk number.





Prices:
TypeWrite Set 4, Dogs: £8.95
TypeWrite Set 5, Cars & Planes: £8.95

TypeWrite Clip Art Catalogue 2: £1.95
A5 binder to hold clip art pages: £2.25

The ST Club
2 Broadway
Nottingham
NG1 1PS
Phone (0602) 410241

Benchmarks

	Falcon	ST	ST with Warp 9
NBM v1.2			
Maths routines	250	99	97
Memory fetch/store	257	99	97
Dialog box draw	332	212	294
Graphics	142	67	106
Quick Index v2.2			
CPU memory	473	100	97
CPU register	406	100	97
CPU divide	504	100	97
CPU shifts	1737	100	97
TOS text	157	110	319
TOS string	158	106	1394
TOS scroll	211	132	135
GEM dialog	193	133	497

X-DEBUG

After years of waiting, Lattice C users finally get a source level debugger. Mark Baines lets out a huge sigh of relief!

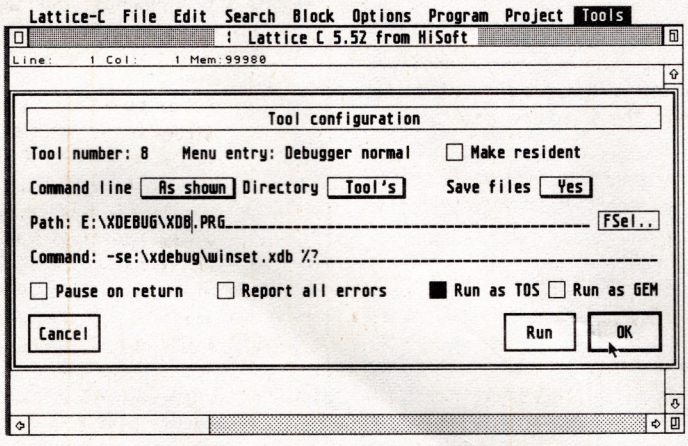
It feels as if I've been waiting for this program, or one like it, for some time. Indeed, it was in 1988 (is it only five years?) that I bought Metacomco's Lattice C version 3.04.02. HiSoft took over development of the Lattice C compiler a few years later and after Lattice C 5 was released there was the promise of a source level debugger called Codeprobe to follow. Unfortunately, it doesn't look as if Codeprobe will now appear, although I think it did on the Amiga.

Why am I so concerned about a source level debugger? Doesn't Lattice C come with MONST2C? Well yes, MONST2C is a debugger par excellence but only if you have some idea of assembler, the working of the CPU registers and can relate all that to your C source code. It is versatile, enables you to single-step through your program's assembly-language source code and look at a wonderful array of CPU registers and memory locations! You can even have your C source code in a window and place breakpoints within it but you have no easy access to your variables and you can't single-step through it. MONST2C has always left me cold as I have never had the inclination to try to come to terms with the black art of machine code and remain quite happy in my ignorance. Some of you reading this will frown very deeply at such a statement I'm sure, but that's the way I am. I make no apologies for being a high-level programmer and having no interest at all in assembler.

My feelings are that many other high-level language programmers feel the same way. Owing to the advancing technology of compiler technology going almost hand-in-hand with the increasing difficulty of programming for graphical interfaces, fewer programmers are getting involved at the assembly code level. This is very evident in the PC arena with developments such as Visual BASIC. What we want is a debugger that enables us to single-step through our C source code, watch the values of our variables change as we do so and see what nonsense we have passed to our functions. If I could single-step though my program's disassembled machine code and understand what it all meant, I'd write in assembler in the first place and wouldn't have bought Lattice C!

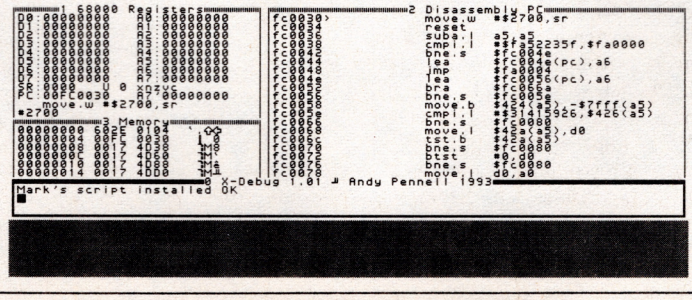
To the rescue has come Andy Pennell. My acquaintance with Andy goes back a long way. He wrote some of the best programs on the Spectrum, including much of HiSoft's Devpac, the forerunner of DevpacST. I still have "Master Your ZX Microdrive" from 1983 on my book shelf! Andy, wrote MONST2 for the Atari Devpac package before leaving HiSoft for Computer Concepts. Continuing his programming efforts for the ST in assembler and C (although sadly not for Computer Concepts who left the ST market shortly after the first Calligrapher fiasco in 1989) and unable to modify MONST to his developing requirements, Andy soon realised that a flexible and configurable debugger was required which especially included features found in PCs he was currently using.

X-Debug was started in 1990 and programmed in Lattice C 5. After a while X-Debug was used to debug itself, something that MONST2 is normally incapable of doing. During its development it was privately released to various testers until its completion early this year with the release of v1.0 through the ST Club.



△ Figure 1: Setting up the X-Debug entry in the Lattice C 5 Tools dialog. The command line uses X-Debug's '-s' parameter which makes it run the script file e:\xdebug\winset.xdb which contains the winset procedure mentioned in the text. The Lattice C parameter '%?' passes the name of the file being edited without its extension so that X-Debug loads up the program file and source code automatically.

▽ Figure 2: The default screen when X-Debug is run from the Desktop. Only three windows are open. My STARTUP script file has already been processed.



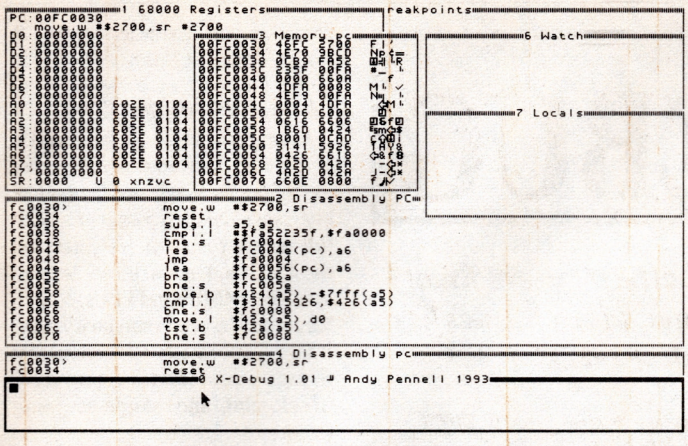
Language Support

X-Debug is both a low-level and a high-level debugger. Low-level debugging is available for assembly language programmers with full access to all the registers on the CPU and even those on any available MMUs and FPUs. At this level there is much similarity with MONST2C with its memory dumps, disassembly, powerful breakpoint and single-stepping facilities.

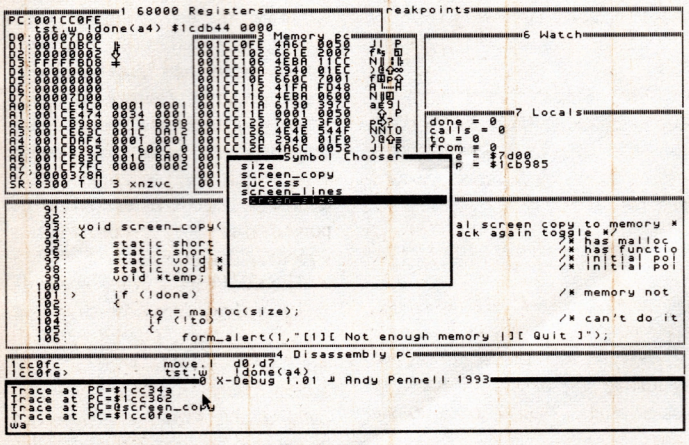
High-level debugging in available for supported compilers which principally means Lattice C 5, using the Lattice C format local variable debug information created with the -d2 compiler flag. Locals, globals, static functions and variables and block declared variables are all recognised. Char, word, long, float and double types are supported with pointers and arrays converted to longs. Typedefs and structures are not supported which may be considered a serious omission.

HiSoft BASIC 2 is also compatible although current versions of it only supply line debug information not local variable source level debug. Global variables are also not available. Other languages can be catered for where the compiler or assembler generate standard Atari-format debug information which means that globals are accessible from within X-Debug although line and source debug won't be available. Devpac 3 and Lattice Assembler code can be debugged at source level, of course, as with MONST.

X-Debug will work on all Atari hardware and processors and all monitor types although ST low resolution has its usual limitations. 1MB of RAM is recommended and TOS 1.4 or later to avoid problems with larger programs. However, a supplied utility DReloc will help overcome this difficulty. X-Debug can be run from the Desktop as a PRG, TOS or TTP file or can be installed in the Tools menu in the Lattice C 5 integrated editor. See Figure 1. In addition to this, X-Debug can be made resident by installing it from the AUTO folder. This is essential for debugging CPXs and accessories and useful for catching exceptions. If you rename X-Debug to MONSTC.PRG and place it in the Lattice C program directory you can even use the Debug menu item in the Project menu although you have less control over it compared to running it from the Tools menu.



△ Figure 3: X-Debug display after running my winset procedure. More windows are open, sized and moved to their respective places. Window 2 shows a disassembly but will contain the C source code when a program is loaded.



△ Figure 4: Setting a WATCH ADD command, that is, adding a global variable to the Watch Window to watch as the program is run. The Symbol Chooser is being used to enter the name of the symbol into the command line for me.

The package

X-Debug comes on a single-sided disk which includes the tutorial files, various additional utilities and monitor drivers (more on that later). The manual comes in the now standard ST Club blue A5 ring file. It is well put together, logically arranged and comes complete with an index. All the commands are adequately explained, as are the variables and reserved symbols used by the program. However, apart from the short interactive tutorial, I do feel that more explanation on the use of the program would be welcome, especially for those new to source level debuggers, which will account for a large number of buyers. The manual does assume rather a bit too much of the reader, especially that they will have experience of MONST, being typical of most manuals written by good programmers. I do wish programmers would write their manuals in collaboration with someone unconnected with the writing of the program. Not easy in the real world, I know, but welcome nevertheless. Having said that, it is well laid out, easy to negotiate and well written.

When loaded, the user interface will be immediately familiar to MONST2C owners. It uses multi-windows in the manner of PCs before Microsoft's Windows 2 came along - character based rather than graphical. Protext users will know what I mean. The screen drawing is slow especially when there are many windows displayed, even at 20MHz and QuickST3. There is no menu bar but the mouse can be used to move, size and select the windows. GEM diehards won't like the display but it is quick and efficient. More importantly, however, is that GEM support would render X-Debug useless in debugging GEM programs as is shown, I believe, by the Aztec Source

CONFIGURATION

There are many Reserved Symbols through which you can modify X-Debug's behaviour and configuration. These can be set with the REG command from within X-Debug or from a STARTUP file which is read and processed when X-Debug loads up. This STARTUP.XDB file is an ASCII file which can also contain any command aliases, key definitions and procedures you want to set up by default. These are necessary as, with the exception of a small number of essential keys, no key has a specific action in X-Debug. It is up to the user to define what key does what, although a sample STARTUP.XBD file is on disk which by default sets up the keys to be compatible with MONST and CodeView. The writing of these key definitions, aliases and procedures is easy to do and you'll soon be developing your own system as I did. The command language is so versatile as to allow for the writing of procedures which can include any number of commands. Attaching that procedure to a key then makes it easy to carry out those commands all at once. One procedure I have is to set up the windows:

```
proc winset
        window move 0 0 2b 50 7
        window move 1 0 0 2d 16
        window move 2 0 16 50 12
        window move 3 16 3 1b 13
        window open diss 4 0 0 28 50 a
        window open break 5 0 11 0 3f 8
        window open watch 6 0 31 3 1f f
        window open local 7 0 31 c 1f d
        load ascii e:\xdebug\startup.xdb
        window move 8 22 28 2e a
        window front 1
        window front 2
        window front 3
        window front 4
        window front 6
        window front 7
        window front 0
        window lock 3 pc
        window lock 4 pc
endproc
```

Under other circumstances, I can load in the program to debug and have the windows set up by calling this procedure from within another:

```
proc init
        dialog " Load Program " Program name:
        load exec #d
        winset
endproc
```

Here, you can see that the Dialog command is used which enables simple dialog boxes to be easily constructed to take the parameters of another command. These are then mapped to certain keys:

```
key alt w winset
key alt i init
```

so that ALT-w calls the winset procedure, for instance. Some commands are long winded and cumbersome to write every time so aliases are useful here. The WATCH ADD expr [format] command adds expressions to the Watch Window but this alias:

```
alias wa watch add #1 #2
```

allows the typing of only 'wa' followed by the expression which can be selected from the Chooser (Help key) and the optional format letter. Aliases for other long textual matter are also available

```
alias prof cd e:\lc5_5\c\profile
```

where typing just 'prof' will change the current directory to E:\LC5_5\C\PROFILE.

Local STARTUP.XDB files can be placed in certain directories so that different setups can be had for different programs and situations. Some internal flags for X-Debug, such as the screen mode, the overscan flag and the font size, must be set up before X-Debug is fully initialized. These are contained in the STARTXDB.VAR file which is also processed at run time. These flags may also be set on the command line calling X-Debug, such as when used in a CLI shell environment or from within the Lattice C 5 editor. Other script files can also be passed as a command line parameter to X-Debug in these situations using the -s parameter. See Figure 1.

Debugger. The windows can take up the whole of the screen, X-Debug being compatible with large screens and overscan modifications. The program being debugged can have its screen display shown at any time and if you have two monitors attached, such as SM194, Moniterm, Viking 2/91 or Reflex card supported monitors you can even show X-Debug on one and the debugged program on another with a mouse on each. Drivers are supplied for these monitors or you can write your own with the help of the supplied code.

Windows

The types of windows available and the facilities for their manipulation at once make X-Debug an advance on MONST2C. Up to ten windows can be open at the same time with each being any size from 6 x 4 characters to full screen. They can overlap each other and with the use of the script language and macros, they can be fulled or zoomed to the screen size and back again with a key press. Alt-0 to 9 will select a particular window or you can cycle through them with the Tab key.

There are eleven window types any or all of which can be shown up to the maximum of ten. The Command Window accepts keyboard input and displays the results just like any Command Line Interface. The last ten commands are stored and can be selected with the up and down cursor keys and re-edited if need be.

A Memory Window displays areas of memory in hex and ASCII aligned to a word boundary. The cursor keys allow movement through it or the Window Address command can be used to go to a particular area. The Window Lock command is useful with this window, so that the display can be locked on to the address contained in the PC register, for instance.

The Disassembly Window will show the disassembled code of your program together with breakpoints and processor information. The Register Window displays all the normal 680x0 registers and flags with memory adjacent depending on the size of the window. An effective-address memory display shows the memory being accessed by the current instruction and its contents. For those computers with Floating Point Maths Coprocessors (68881, 68882 or 68040) and/or a 68030 with MMU such as on a TT, FPU and MMU Register Windows are also available.

A Breakpoint Window displays the list and state of all current breakpoints. A Watch Window will allow the values of various expressions and global variables to be shown. Here the address of a pointer or the memory it is pointing to can be displayed which will be updated as you step through your program, for instance. Decimal, hex, ASCII or character displays are allowed. This is one of the most important windows, useful for keeping an eye on certain variables and memory contents whilst your program runs. Similar to this, and equally valuable, is the Locals Window which displays all the local variables within the current function being run as well as the parameters being passed to that function. The Watch and Locals Window will probably be the most used and useful.

Smart Windows are shown when debugging a supported high-level language program. The display can be of the original source code, the compiled assembly code or a mixture of both. If a specified mode cannot be displayed then it will automatically switch to the one it can, for instance it will switch to the mixed code listing if single-stepping your source code with the STEP ASM command (single-step the assembly code at the PC) and the PC lies between source code lines. This window can be scrolled up and down as can the others, the code examined at any point with breakpoints inserted into it and it being either single-stepped through or run from any line.

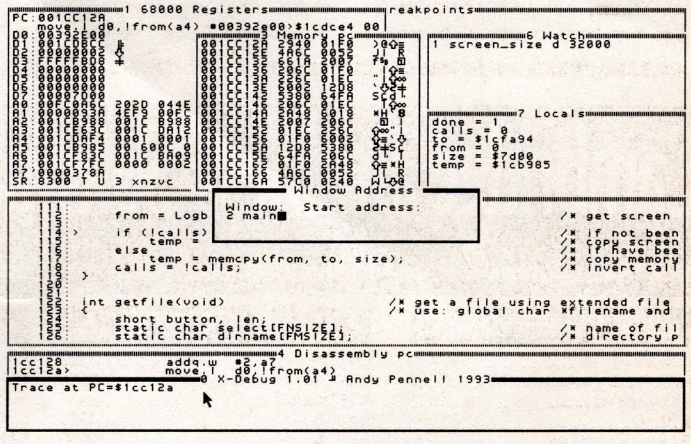
Lastly, there are ASCII Windows which will display any ASCII file you wish to load up. This may be useful for examining additional code or header files.

X-Debug contains a flexible and sophisticated expression evaluator using standard Motorola assembler syntax which will again be familiar to MONST2C users. Operators include indirection and size truncation. All expressions are calculated using signed 32-bit arithmetic. The evaluator is so flexible that any command expecting an address, for instance, will accept a source code line number, register, complex expression or symbol chosen from the Symbol Chooser dialog. This is selected at any point when writing a command or expression or in a dialog box by pressing the Help key. A list of available symbols are shown which can be navigated through easily to select the one you want. A similar Chooser can be used for selecting source code files to be shown in a Smart Window.

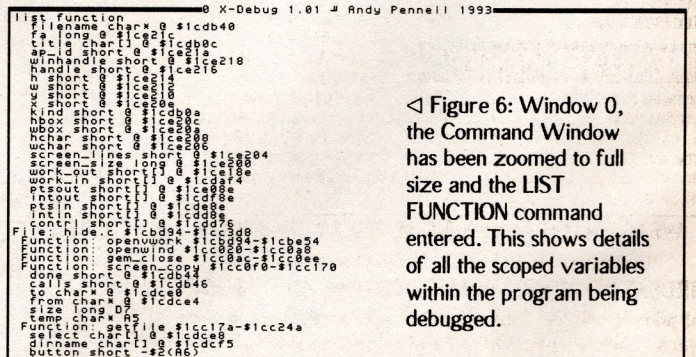
It would be pointless of me to list all the commands available to the user, except to say that the list is comprehensive and very similar to that available in MONST2C. There is on-line help and various LIST commands provide you with all the information you could want about X-Debug, the program being debugged and more. All of this can be shown to screen or redirected to a file or printer. There are various commands for single-stepping through source or assembly code, setting breakpoints (MONST or X-Debug format), loading and saving files or user defined symbols, memory manipulation, running, searching, watching and window control.

All this comes down to one thing - flexibility and versatility. X-Debug was designed from the start with these in mind and it certainly shows. Debugging a program requires great concentration and the last thing you want is for the interface of the debugger to get in your way whilst doing it. How many times have you got used to pressing, say, ALT-L in one program to load a file only to find that in the program currently in use ALT-L performs a function that you can't abort from and takes several minutes to finish?! Setting up X-Debug so that it works according to your preferences - the commands coming naturally to hand - overcomes much of these interface problems. This is one of the reasons why programs such as Tempus II and Protext are so popular - they treat the user as an intelligent individual!

Apart from X-Debug and its example STARTUP files, there are some example program and code files for the brief tutorial and the monitor driver files already mentioned. Andy has also thrown in some of his own little utilities which many will find useful. DReloc fixes the executable relocation information problem for pre-TOS 1.4 users. DumpDB dumps out the



△ Figure 5: Single-stepping through the program with the value of the screen_size global shown in the Watch Window and the Local variables in the current function shown in the Locals Window. The PC is at address $1CC12A, at line 114 of the source code in Window 2. In use is a procedure which calls a dialog box and the WINDOW ADDRESS command. I am setting Window 2 to display from the main() function (this doesn't move the PC). Note that Window 3 is showing a memory dump locked to the address pointed to by the PC.



◁ Figure 6: Window 0, the Command Window has been zoomed to full size and the LIST FUNCTION command entered. This shows details of all the scoped variables within the program being debugged.

Lattice format debug information with the HiSoft extensions found in an executable file. LoadHigh lets you load X-Debug in the RAM above 512 K so that you can debug a program as if it were running on a 512 K machine. TTHead allows a program's header flags to be changed and ResetFPU sorts out a problem for users with a 68882 and TOS 3.05 or less.

Conclusion

I've been using X-Debug for some time now and my admiration for it has not diminished one bit. It has been rock solid in operation even in OverScan mode on a 20 MHz 68000 run from Lattice C whilst debugging a large program with five source files and all sorts of AUTO folder and accessories loaded - even when my program crashes, it catches it and can return me back to Lattice C without problems. Not many programs are that secure and stable. As a loyal Lattice C user of many years it has been something of an embarrassment that this superb and, otherwise, comprehensive package has been bereft of a source code debugger for all this time. Other C compilers on the ST have them, even some PD ones! If you are a Lattice C user and your principal language is C then I can't see how you can survive without this excellent program. Even for those coping well with MONST2 X-Debug offers you more versatility and provides you with more information in the search for that elusive bug. The change over from MONST2 would be almost painless with a STARTUP.XDB script file enabling you to keep your familiar MONST2 key assignments.

I guess you can tell I'm very pleased with X-Debug and at this price it's got to be great value for money, affordable for both professional and amateur programmer. I can unashamedly say that it is one of the best things to come my way for a long time on the programming front, well since Lattice C 5.5 anyway! Thank you Andy.

Summary

Points for: Unique for Lattice C and HiSoft BASIC users, quick, stable, easy to use and configure, very versatile and flexible. Does more than MONST2 is capable of in a more natural way for C programmers.

Points against: Greater details and explanation in the manual for absolute beginners. Structures and typedefs not supported. Slow screen drawing.

Alternatives: As a source level debugger for Lattice C - none! As a low-level debugger MONST2 which is supplied with Lattice C. Other compilers have debuggers which aren't available separately or compatible with Lattice C code as far as I know.

Product:.....X-Debug
Version:..... 1.01
Writer: ..... Andy Pennell
Distribution:.... The ST Club
2 Broadway
Nottingham NG1 1PS
Phone:.....0602 410241
Fax:..... 0602 241515
Price:..... £24.95 (plus £2.25 postage in Europe, £6.00 rest of the World)
Manifest:..... One single-sided disk containing program, example STARTUP files, utilities, screen drivers and tutorial files. A5 manual (69 pages in standard ST Club ring file).
System:..... All STs and TTs and probably Falcon030 in ST screen modes. 68000 to 68030 CPU (not tested on 68040). 1MB RAM recommended and TOS 1.4 or later.

A demo version is available from the ST Club on disk LAN.139.

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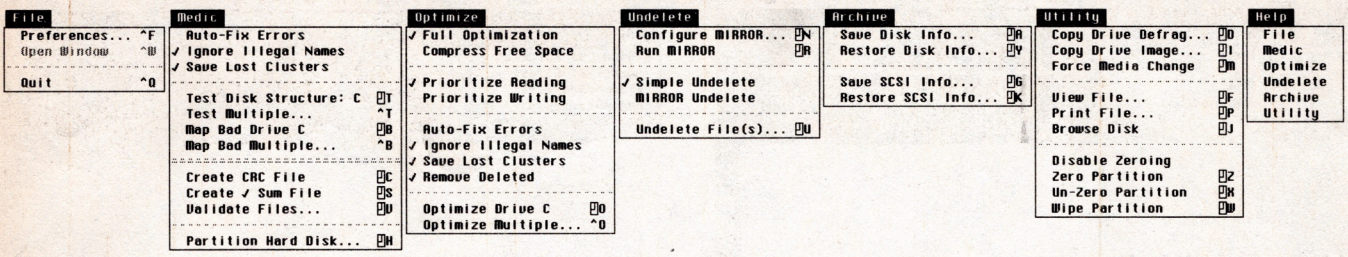
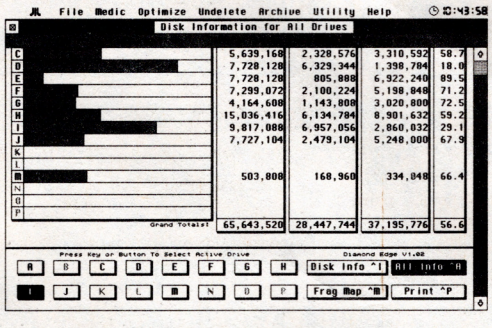
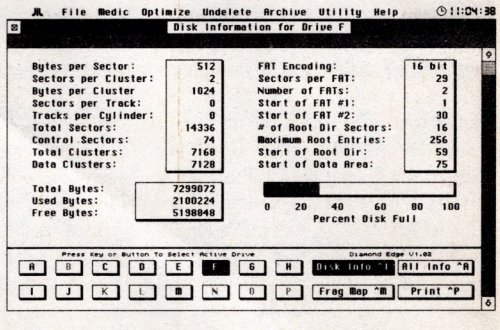


DIAMOND EDGE

Disk utilities fall into three categories: Low-level Editors, Archivers, and Managers. Those stalwarts of the Atari scene, HiSoft, have already cornered the first two markets with Knife ST and Diamond Back - their quest for complete ST disk domination is manifested as Diamond Edge, purported to be a must for any serious Atari user. Michael Baxter has been analysing HiSoft's latest gem...



△ The "All Drives" display provides a visual discription of your hard disk capacity and current usage.



△ One of Diamond Edge's few departures from its high level interface is the Disk Information window, which provides critical information on any selected disk.

Do we really need yet another disk utility? The public domain is crammed with the things, commercial variants have come and gone, and by now most people who need disk management facilities will have a setup which works for them... or will they? Undeniably, any such package released onto the market at this stage must be outstanding to make any headway - HiSoft have done this twice with Knife-ST and Diamond Back, both of which are generally acknowledged as the best available on the Atari platform. To complete a prestigious hat-trick, however, HiSoft must take on the combined forces of half a dozen respected (and free) public domain programs, as well as the likes of Michtron's long-serving Turbo-Kit, and prove to be head and shoulders above all of them whilst carrying a £50 handicap. It's a tall order, but on paper at least HiSoft appear to have a product with the credentials to do just that.

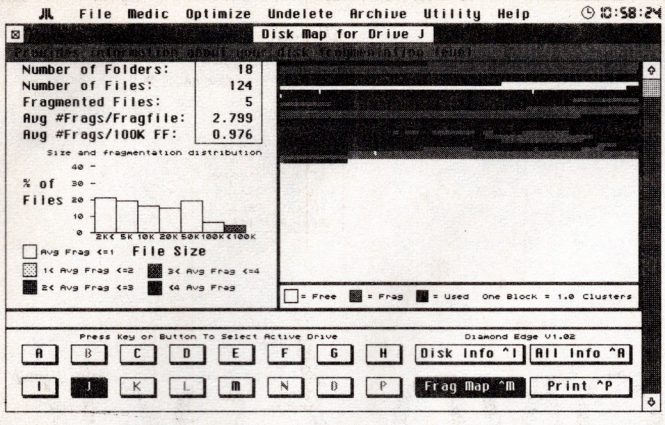
Diamond Back is another program from Oregon Research Associates, who already have the highly acclaimed hard disk backup utility Diamond Back under their belts. The package is being marketed in the UK by HiSoft, who are currently re-writing the manual. Not that the present incarnation leaves anything do be desired, mind you. It has been expertly written and set out in such a way that key information can be located quickly, and takes the time to explain some of the more esoteric technobabble that this type of utility inevitably becomes embroiled in. Any changes HiSoft are planning will, I hope, be cosmetic only. Perhaps given the nature of this program, it's just as well that the manual is easy to get into: you are advised to read the manual from start to finish before even booting the program - in common with all programs of this ilk, it would be very easy for a reckless user to trash his or her hard disk with a few ill-chosen mouse clicks. Installation involves entering your name and address into a small validation program, which then creates a working copy of Diamond Edge on the master floppy. It will then copy the Diamond Edge system across to any hard disk partition of your choice.

Rather than trying to cram as many disk utilities into one package possible, Diamond Edge concentrates on four specific areas, namely disk diagnostics, repair, optimization and recovery. If you need any other facilities, such as low level disk editing, back up functions, file management, etc., than you will have to look elsewhere. Some users will place more value on Diamond Edge's facilities than others, but anyone who makes medium to heavy demands on their hard disks will at some time need the facilities that a program such as Diamond Edge offers. Moreover, professional users would be insane not to have a copy.

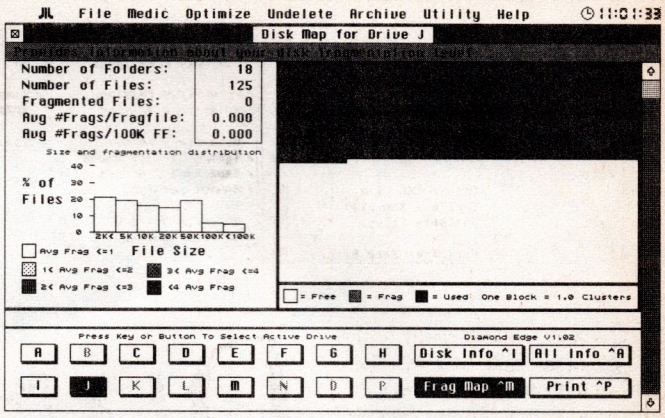
Prevention or Cure?

Unlike most other programs of this type, Diamond Edge goes out of its way to prevent data loss occurring in the first place, rather than waiting for the inevitable to happen and then trying to pick up the resulting pieces. Many recovery programs adorn the public domain, but in my experience these are very hit and miss affairs, which require conditions to be exactly right before they can do their stuff. Diamond Edge tackles the problem of data loss from an angle previously unexplored on the Atari platform, and the results are nothing short of amazing. In fact, there's something of a sledge-hammer approach being applied here. Firstly, Diamond Edge more or less expects that data loss will occur sooner or later - pessimistic or realisic? It then goes out of its way to prevent this happening via various processes which I will explain next. Then, if the worst comes to the worst, it employs the most powerful recovery routines yet devised for the Atari system, which will see many users emerging from otherwise catastrophic disk situations with smiles on their faces - and there's lot to be said for that.

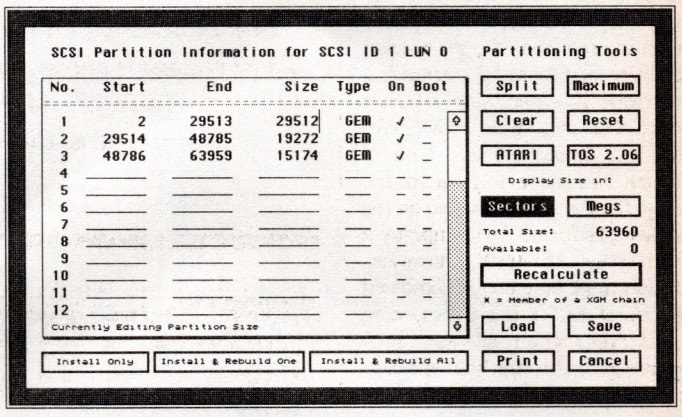
As any doctor will tell you, prevention is better than cure. Any illness detected in its early stages is easier to cure with simple medicines or minor operations. Let things get out of hand, however, and you could be asking for a whole heap of trouble, culminating in major surgery. Oregon Research have applied this sober-



△ The file fragmentation map display is generated in such a way as to show not only the physical file fragmentation, but also directory fragmentation. The relative frequency histogram shows the distribution of the sizes of files on the disk and the average fragmentation level for each size class.



△ This is the same partition after Diamond Edge's optimization algorithms have been put to work. The whole process took less than two minutes, and will result in greatly increased hard disk performance.



△ The Diamond Edge SCSI Partitioner: versatile and flexible, it operates with both ACSI and SCSI drives and supports Atari, Supra, ICD and BMS partitioning standards.

ing fact to the somewhat less sombre subject of disk structures, and with startling results.

Doctorin' the Disk...

Diamond Edge's Disk Medic functions can test for any abnormalities in the structure of both hard and floppy disks, and if required, will automatically fix damaged disks with no further brain-input from the user. Alternatively, Diamond Edge can give a full diagnosis, then log its findings in an error file which can be viewed and/or used for disk repair later on. Diamond Edge can detect and correct a wide variety of disk abnormalities, such as invalid boot sectors, FAT#1 and FAT#2 disparity, invalid directories or unreadable directory sectors, illegal file names, bad directory entries, inconsistent file sizes, bad FAT entries, FAT chain collisions and lost clusters. Bad sector detection and mapping are extremely well implemented but best used on empty or redundant partitions. Various methods are employed which vary in efficiency, with the most effective being potentially destructive, hence it is best used before you commit any essential data to the disk.

Validation Files

Diamond Edge uses a clever technique to detect whether the contents of files have been corrupted or changed over a period of time. Firstly, it creates a validation file which contains calculated numbers that uniquely identify the contents of all the files on a selected disk or partition. Two checksum calculation methods can be used: a 16-bit checksum which is very fast and secure enough for most purposes, or you can employ the 32-bit Cyclic Redundancy Check (CRC), which is slower but nigh on infallible. At a later date this file can be referenced and its checksum numbers compared with the corresponding disk files in their present form. Any discrepancy is reported and the suspect filename is recorded in a validation error file. Obviously, this data-vetting technique is not much use with constantly changing data files or self modifying application programs, but is an excellent way to keep tabs on the state of unchanging data, such as ordinary program code, font files, resource files, etc., and could even highlight the presence of link viruses. Usefully, the validation files created with Diamond Edge are fully compatible and interchangeable with those created with Diamond Back 2.

Disk Optimization

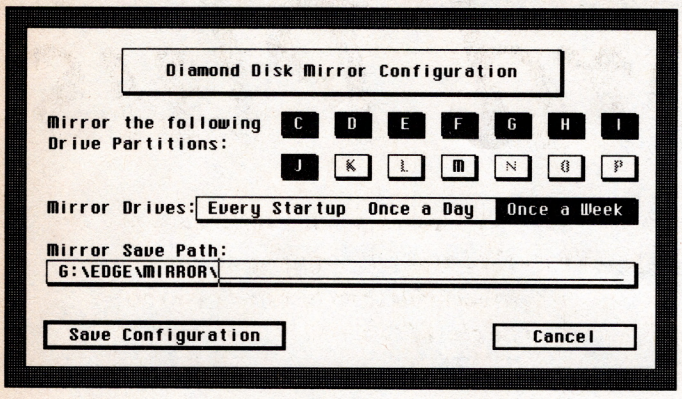
Hands up anyone who can say that their hard disk performance is worse today that it was yesterday - OK, so there's probably not very many takers there. But can you say the same if the time gap is increased to a month, or even since the drive was new? Still not sure? All hard disks suffer from file fragmentation, particularly large or heavily used ones. As files are repeatedly written to, appended, deleted, updated, deleted and so on, they can become physically spread around the disk in different locations - this is a normal by-product of everyday system operation. Drive head movement is the slowest operation in any disk drive: the harder and further it has to search in order to complete a read or write request, the slower the effective data transfer rate becomes. Since this happens over a long period of time, you may notice little change in performance. Reorganizing or defragmenting your drive so that as many files as possible are located in contiguous clusters will let you rediscover long lost disk performance and give your drive heads a much deserved break.

There are two ways to do this. Either you manually move all the files from the tangled partition (either to another empty-ish partition, or onto floppies - ugh), zero the partition, and copy all the files back again, or you can get a disk optimization utility to do the donkey work for you.

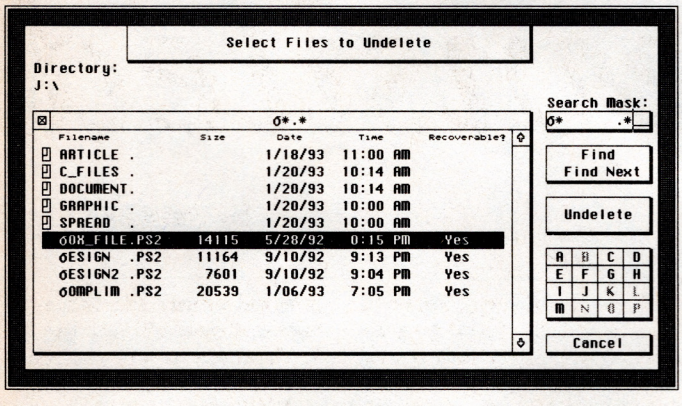
Given a choice, most people would opt for the latter, and after using the Diamond Edge optimizer, they'd probably not swap it for two copies of any competing product (thanks, Persil). Seriously though, the optimization facilities on offer here far outstrip anything else on the market, with the possible exception of the much-praised ICD CleanUp utility, which I haven't used and so can't comment on. It does everything you could reasonably ask of such a facility, and considering the complexities of the task, it does it with incredible speed. A full optimization on a heavily used 12Mb partition took around one and a half minutes on a 16Mhz Mega STE. Optimizations can be made to prioritize either reading or writing operations by placing the newly reorganized block of files at the beginning or end of the partition. In addition, you can opt to compress any free space in the partition. This will not remove any existing file fragmentation but will considerably reduce future disorganization. Space compression is considerably faster than full optimization, and used regularly after a full optimization, it will eliminate most file fragmentation and maintain peak hard disk performance.

Disk and File Recovery

Without a doubt, the facilities on offer here are the most comprehensive yet seen on the Atari platform. I am not aware of anything else which can match it, and having seen what it can do in gut-



△ Diamond Mirror can be run from within Diamond Edge, but is most useful when installed as an Auto folder program. This configuration will automatically mirror partitions C-J once a week. The whole mirroring process takes less than 10 seconds.



△ Two undelete methods are employed. Mirror delete is the most effective, assuming that you have a recent mirror file for the drive that contains the deleted file. Otherwise, Simple delete will recover as much of the file as posible given the state of the FAT table.

wrenching, panic-enducing situations, I'm not sure that anything ever will. Diamond Edge goes further than recovering accidentally deleted files and folders - complete partition and hard disk resurrection is not beyond this program. Situations which would normally result in many a distraught user dangling from the end of a rope can be breezed out of with a few mouse clicks...

In keeping with the preventative maintenance theme, Diamond Edge takes regular snapshots of all of your hard disk's vital statistics - FAT's, directories, boot sectors and ACSI/SCSI partition information. Most of this can be done automatically via Diamond Mirror, an auto folder application which saves vital disk information at regular, programmable intervals. Unchanging info like partition and bootsector information can be archived and stored on an emergency floppy disk. Then, when the manure hits the fan, you are in an extremely good position to recover the vast majority - if not all - of your lost data when the problem lies in the actual structure of the disk. But why do we need such advanced solutions to a problem which can be largely overcome with a full backup? Admittedly, as the manual is often at pains to point out, there is no substitute to a full hard disk backup taken at regular intervals. Diamond Edge can recover situations which would previously have been hopeless without a full backup, but there are still some occasions where you can be left with a useless drive. Diamond Edge can only restore disk structure information - if an application goes haywire and vomits garbage all over the actual data on your hard disk, then tough - if you don't have an image backup then you are sunk. But c'mon, how often do we back up our hard drives? Be honest, if we say do it once a week we would probably be lying. Even with well specified backup programs such as Diamond Back II, full hard disk backups are a painful chore. In this light, programs like this are absolutely invaluable: Diamond Edge's preventative measures take around 10 seconds per worksession, and in the vast majority of cases, can restore files and disks to the way they were at the last bootup. And in conjunction with the powerful disk and file validation functions, it all adds up to probably the best insurance policy you can buy, and peace of mind doesn't come much cheaper than this.

Maintenance Functions

In addition to all this, Diamond Edge provides several integrated utilities which are really the icing on the cake, and are of particular benefit to users who have been making do with the bog-standard Atari HDX utilities. Firstly, there's a fully featured and flexible SCSI hard disk partitioner which supports the Atari Disk partitioning standard, as well as third party derivatives such as ICD, BMS and Supra. It can rearrange your existing partitioning scheme, hide and unhide secret partitions and save and rebuild partition information.

Partition zeroing and un-zeroing is supported, and for the paranoid, a wipe partition facility is available which not only zaps the essential FAT and directory tables, but every single sector in the partition. And there's more! The partition-to-partiton copier - as its name suggests - will copy entire partitions, either as an exact image (which requires the destination partition to be exactly the same size and type as the source), or a more generally useful defragmentation copy which, yes, you guessed it, copies a source partition to a destination partition, automatically defragmenting the files in the process. And finally, a pretty standard file viewer/printer and disk browser round off a very handy bunch of disk utilities.

High Level

Traditionally, programs such as this which deal with the nuts and bolts of the machine demand a fairly high degree of technical knowledge from the user to get the most out of them. Not so with Diamond Edge. All operations are dealt with at a human level, with only the broadest knowledge of disk structures being asked of the user. At no time are you expected to scramble about at byte level in order to fix a problem. Diamond Edge informs you of any abnormalities and errors, and simply asks if you would like to fix them. If you reply "yes", then Diamond Edge gets on with it using its own highly refined repair algorithms to do the job. Even the horrific complexities of FAT table restoration et al is shielded from the user extremely well. This will probably not satisfy hacker types, who like nothing better than to rummage around in the darkest corners of their machines: for them, Knife ST awaits. Diamond Edge has been written with the everyday user in mind, and applies an unparalleled degree of user friendliness to an undeniably complex area. Considering the program's unsurpassed power and potential, this is no mean feat.

Summary

For:

- ✓ Best program of its kind on the Atari
- ✓ Easy to use, no specialist knowledge required
- ✓ Very stable, bug free
- ✓ Optimization algorithms are excellent

Against:

- ✘ Nothing!

Conclusion

Diamond Edge is a highly polished product which simply reinforces HiSoft's reputation as the premier supporter of the Atari platform. With 5p change from fifty quid, it's certainly not cheap, but if you own a hard disk, this is certainly a program to sell your granny for. Buy it today - tomorrow may be too late...

Product:.....Diamond Edge
Version:.....v1.03
RRP:.....£49.95
Supplier:.....HiSoft,
The Old School,Greenfield,
Bedford MK45 5BR
Tel:.....(0525) 718 181
Fax:.....(0525) 713 716
Manifest:.....75-page spiral-bound manual (currently being re-written), double-sided disk.
System:.....Any ST(E)/TT/Falcon system, medium/high resolution

Anyone lucky enough to own a Falcon will be pleased to know that the latest version of Diamond Edge (v1.04) is now fully compatible with the IDE hard disk interface.

First Word Plus Revisited

ST word processing has moved a long way since First Word Plus (FWP) was originally released, and now the program looks uninspiringly limited when compared with the latest font-hopping document-processors. It does, however, retain a large following: having an approachable interface and generally doing what it does very well, it remains a useful and reliable tool. The aim of this article is to examine additional software available to enhance and expand its performance. As a mature and established application, FWP benefits from a wide range of supporting utilities which can yet turn this old Bagpus of a word processor into a much more powerful system.

by Sam Marshall

Read carefully before breaking seal

The programs discussed here are an indiscriminate mix of commercial, shareware and public domain. Some of the software is quite complicated to set up and those which operate within FWP may increase the likelihood of crashes, hence you should be careful about document back-ups until you are confident that any programs you try are stable in your set-up; keep originals in a tin box and light at arm's length.

There are many more FWP-related programs available than are covered here. The choice reflects those which I've found most useful, comprehensive or comprehensible. There exist, for example, a fair number of relevant German PD programs, but I have included only those which I was able to master by exploration alone. Similarly, there are enough .DOC to ascii converters to cobble dogs with, but as this features as a component of other applications, programs which do nothing more have been omitted.

Few of the accessory or auto programs can realistically be used with a 520 ST running FWP - memory's just too tight. Otherwise, all such items should work OK on a 1MB machine (well, not all at once perhaps...). All are STE compatible.

Deciding how to group the programs is tricky as many serve more than one purpose. The order given is an agony-aunt approach, taking each of FWP's main problems in turn and suggesting what can be done.

General utilities

Most people will have a favourite set of boot-up utilities which they use across a range of programs, but just in case you don't, here's an outline of things that are likely to be useful.

File Management - something (anything!) to format a disk whilst FWP is running is essential, and the ability to create folders and move files very handy. See below for some possibilities.

RAMdisk - if you have sufficient memory, a reset-proof RAM disk can speed up printing and temporary back-ups for floppy-based systems whilst being able to survive most crashes (unlike normal RAM disks). You still need to make occasional saves to disk in case of complete power loss/ machine failure of course.

Print Spooler - if you have a slow printer, this can act as a buffer to release FWP whilst your output is being produced. There are many spoolers around (e.g. Barrel), often combined with RAM disks etc.

On top of these, utilities such as screen savers, mouse accelerators and so on can make life much easier. Harlekin and Mortimer are commercial programs with all of the above and much more - so much more that you're unlikely to need all they offer within FWP itself. All the file handling, for example is also offered by the ST Club's Universal Item Selector III (or most of it by the PD program Filetool). Ultimately such general tools are a matter of personal preference, but as word processing is the main 'serious' use of the ST for many people, it's worth taking time to get a set up that includes most of them when using FWP.

Printing and fonts

FWP's printing routines are adequate for most purposes, but can be inflexible in the fonts available, and the quality still falls short of the 'graphic' output of Signum or GDOS-based programs when using dot-matrix printers.

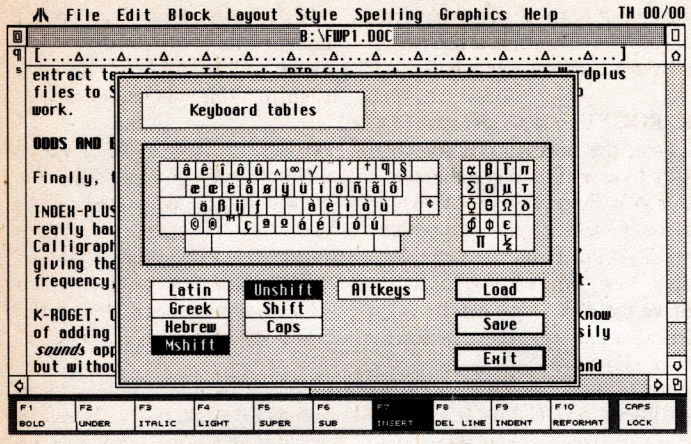
First of all, you need a decent printer driver - FWP comes with facilities to create your own, but this is a daunting task amid an otherwise friendly application. You can usually find a supplied driver to match at least one mode of your printer. If not, the ST Club has a handsome range covering most types, including the HP DeskJets. Whilst these can help in gaining access to the full character set of your printer, and can sometimes improve the print resolution, they can do little to tackle the inherent limitations of either FWP or the printer itself.

Fontkit

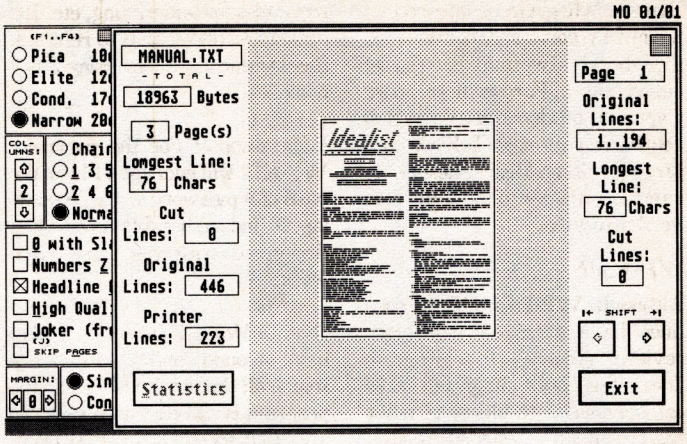
So, next on the list of solutions comes the Fontkit Plus family: Fontkit itself, Fontswitch, Fontprint and various other handy utilities that come with versions 3 & 4. The utility of this package is perhaps not immediately apparent to FWP users - Fontkit's main function is to manipulate/create GDOS (and other DTP-related) fonts - but it can also create fonts which FWP can use both on-screen and for printing with its wide range of printer support functions. The main interest here, though, lies in Fontswitch and Fontprint.

Fontswitch runs as an accessory for the management of both screen and printer fonts. Like Harlekin it allows you to change the default screen font should you object to the ST's normal one (to replace it with a much crisper mac-like one, for example), but Fontswitch also lets you select fonts to be downloaded to your printer.

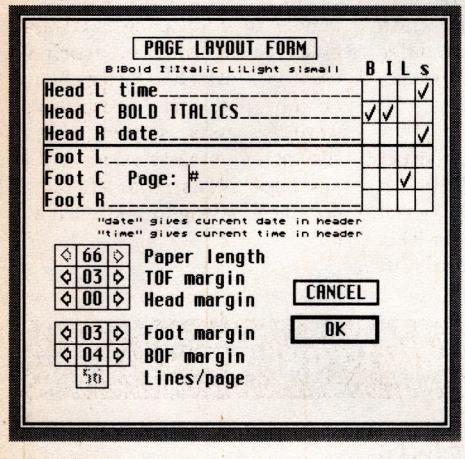
If your printer does not support downloadable fonts, this facility can be emulated for 9- and 24-pin printers using Fontprint. This cannily intercepts FWP's own print routines to replace the standard font with one of your choosing. It can vastly improve the quality of your output, as well as the variety of styles available (though you can pay a price in printing speed). A specialized 24-pin version of Fontprint - Italicprint - may also be used to give a true italic font when used in your document (usually



△ Part of Fontswitch's talents includes keyboard maps to assign extended ascii characters to keys - this is the 'metashift' layout showing bindings to foreign, Greek and maths symbols.



△ This is the page-preview option in IdeaList showing a document re-formatted into 2 columns. The main options box is peeking out on the left.



◁ The dialogues in 1WP2PS keep things as simple as possible by emulating those in Wordplus itself - just begging for a "look and feel" lawsuit!

printers simply employ a slanted version of a normal font).

The third use of Fontswitch is to re-map your keyboard. It enables you to re-configure bindings for normal, alternate and metashift keys. This can be useful for entering foreign or scientific characters without having to click on FWP's printer window to insert them in the text. Configurations can be saved to disk, and access to TOS's entire Greek and Hebrew sets is supported. It is even possible to force text to progress from from right to left, as used in Arabic or Hebrew scripts.

IdeaList

In a somewhat different vein is a PD printer utility called "IdeaList". This doesn't offer fancy fonts, but it does provide a wealth of output possibilities for ascii and Wordplus files. The program runs in both accessory (mono only) and stand-alone versions (medium and high rez). It allows you to re-format text into up to 9 columns, prints in a range of point sizes (depending on your printer) and can add its own headers, page numbering, etc. I managed to squeeze four normal pages of text onto one sheet of A4 using 2 columns at 20cpi (characters per inch) and still get readable output from a 9-pin dot-matrix!

Of particular use with FWP is IdeaList's ability to print only odd- or even-numbered pages - great for printing both sides of continuous stationery. One other feature is also potentially very useful - the ability to embed printer control codes in a file. This means that IdeaList can write a printer-specific file that contains all the necessary information to retain superscript, underlining and so on. It can then be sent to a printer with a standard print routine such as that offered from the desktop. Similarly, if you have a decent printer at work, and a suitable IdeaList driver for it (HP Laser and Deskjets are supported, for example), a PC could be used to output the file just with DOS's print command.

With luck, a full review of IdeaList will appear in ST Applications soon.

Postscript

Finally, having broached the subject of laser printing, comes PostScript. Whilst Calligrapher brags about its new support of this format, FWP has had this ability for years in the form of a dapper PD utility called 1STW2PS (OK, so its name lets it down a tad!). This allows you to convert Wordplus files into PostScript using a courier font and retains all the typesetting features of the original document. Control is via a series of dialogue boxes mimicking those in FWP itself, allowing you to change headers, set page number offsets and so on, but ending with options to output to the parallel or serial ports, or to a file. Even .IMG files embedded in the document are converted, giving exceptional quality when laser-printed. The only spanner in the ointment is that it can be fiddly to match margin settings with those produced by the printer. Once these parameters have been determined, however, this utility can prove invaluable.

Converting file formats

As an established word processor, FWP's .DOC files are usually accepted by most other ST word processors. Moving such files onto other platforms though can prove tricky. One solution is to befriend a Redacteur owner, as this can import FWP files and export Wordperfect or MS-Word ones - much more widely-recognised formats (yet another ST Club product gets a free ad!). An alternative is to try TeX (or its superset LaTeX), the typesetting system available on just about everything. Finally, if all else fails, there's always ascii to consider. This section looks mainly at TeX, and WP-Pack - a German Utility to manipulate FWP files.

TeX

The output from a TeX system can be outstanding - it offers a very flexible way of describing pages of text that is consistent across many platforms and output devices (see David Harvey's series in STA 21-24 for all the gory details). It is, however, an awkward and long-winded process at times. Converting FWP files to TeX both allows you to export them to other machines, and takes some of the convolutions out of creating TeX files. For example, you can use bold, italic, superscript effects and so on without having to worry about using slashes and curly brackets everywhere (or how to insert a curly bracket when you really want one!). Moreover, the frustrations of trying to track down a syntax error are greatly reduced.

Three PD TeX converters are available: WPTEX, 1wptotex and an option in WP-Pack. Of these WP-Pack's conversion is the most unadorned - converting the body text adequately, but producing only limited headers. WPTEX provides a more comprehensive output, though requires additional definition files with a large amount of redundant information and some German-specific definitions. It also seems to insert far too many paragraph divisions. In WPTEX's favour though, is that it is the only one of the three capable of handling graphics. 1wptotex has the advantages of being in English and producing the most 'clean' conversion of all. It has the (possible) disadvantage of being a TTP application, and appears to ignore indents in the FWP original.

All of the programs cope with the full range of FWP text effects, and even convert extended ascii

characters (e.g. Greek letters) into their TeX command equivalents, though only 1wptotex recognizes pound signs. Furthermore, only 1wptotex produces a file which can be run through TeX without further editing. Hence, despite its interface, this is probably the best version to go for.

WP-Pack

Although WP-Pack's TeX routines have received indifferent reviews recently, this program does offer a well integrated GEM environment with plenty of other handy options designed specifically for FWP. Briefly these include:

ascii DOC ~ Although available in FWP itself, this option can be useful for converting files which FWP refuses to read, and because turning off "WP" mode doesn't always produce pure ascii.

wordplus wordplus ~ Sounds insane, but this option is actually useful for converting v3.x files to 2.x format - should you wish to go back to the older program there are sometimes problems with control codes for underlining, etc. The option also allows you to reformat the document without using FWP itself.

Encryption ~ For the paranoid, WP-KIT will encrypt a file on the basis of a password string, rendering it indecipherable until it is decrypted with the same password.

Overall WP-Kit is a handy tool to have around, and though it's a shame all the text is in German the program is still easy to use. It can also extract text from a Timeworks DTP file, and claims to convert Wordplus files to Signum format, though I was unable to get this option to work.

Odds and ends

Finally, the bits that wouldn't fit anywhere else:

INDEX-PLUS: To get indexing facilities in a word processor, you really have to go to the top-end packages such as Protext or Calligrapher. This PD program, however, can create a crude index, giving the page numbers of words appearing with a selectable frequency, or construct a lexicon of all words used in a document.

K-ROGET: Once offered by Kuma, this accessory is the only way I know of adding a thesaurus to FWP. Being able to search and browse easily sounds appealing and the search routines are tolerably fast, but without a hard-drive the disk swaps can be very irritating, and the range of words offered is rather limited.

ABBREVIATOR: This is a shareware accessory which allows you to define macro character strings that replace abbreviations in a document. For example it would allow the expansion of every occurrence of "STA" to "ST Applications", or correct frequent typo's such as "hte". FWP's own replace function seems to offer much the same facility in the end, though.

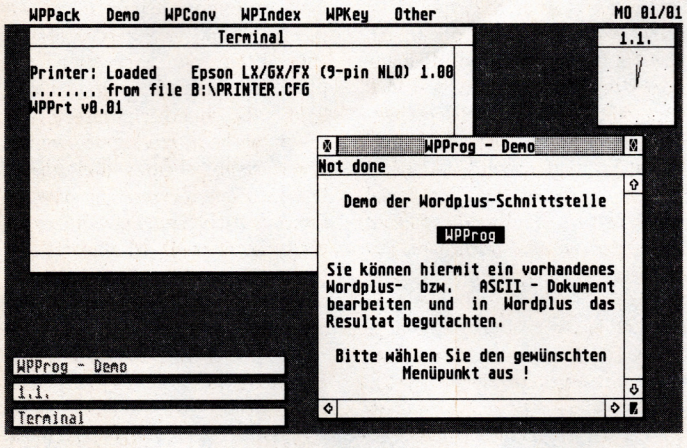
ST-KLICK: Yet another export of those krafty Germans. This is a multi-purpose accessory which may be useful for non-Harlekin owners as it offers calculator, calendar and alarm functions. It also has a handy dot-matrix typewriter option, which can be very useful for addressing envelopes.

1WP2FAX: A new utility which claims to convert .DOC files for use with any fax program (such as ST-Fax or STraight-Fax). Unfortunately I couldn't obtain a version of this in time (but then I don't own a fax modem either). Watch the PD Update columns.

KUBIS: Absolutely nothing to do with FWP at all, really. This is an excellent mono accessory version of Tetris - very handy for when the article you're writing seems to be going on for ever!

That's all, folks!

So, as promised, quite a bumper bundle of supporting software exists for our old friend, much of which can make FWP continue to be a workable and inexpensive word processing system (and a real incentive to learn German!). I just hope there's room left for a document having loaded them all in...



△ WP-Pack pack tries to do a convincing impression of Multi-TOS (but makes the mistake of actually being available).

The quick brown fox jumped over the lazy dog. Citizen 120D printer in standard NLQ.

The quick brown fox jumped over the lazy dog. Citizen 120D printer with Fontprint 9 and Souvenir NL10 font.

△ A demonstration of the improvement in print quality obtainable from using a Star-NL10 font downloaded into Fontprint and output through a Citizen 120D 9-pin printer.

Where to get 'em

Commercial Products:

Fontkit Plus: ..... £24.95 - ST Club - see order form
Harlekin: ..... £59.95 - HiSoft. Tel: 0525 718181; Fax: 0525 713716
K-Roget: ..... Second-hand only (Hi-Soft stock some Kuma lines, but not this)
Mortimer: ..... Ditto (once appeared on an ST User cover disk - ask around)
UIS III: ..... £14.95 - ST Club - see order form

Public Domain/Shareware:

	ST Club Disk Number
Barrel	UTI.61
Abbreviator	UTI.171
Filetool	DMG.27
IndexPlus	WPR.24
Kubis	DMG.27
ST-Klick	DMG.12
WP-Pack	PDC.99
WP-TEX	PDC.99
1wp2fax	TMP.30
1wptotex	TMP.30
IdeaList	TMP.30

Plus Cache ST

Making a welcome addition to the range of hardware accelerators is Plus Cache ST. Imported by System Solutions late last year at the loss-leading price of £99, this board still offers good value for money at a shade under £130. Derryck Croker looks at this offering from GE Soft, a German company perhaps better known for their hard drive interfaces and associated programs.

Derryck Croker

Arriving in the post wrapped in a black anti-static bag and with the pins of its DIL header pressed into a piece of conductive foam, initial impressions of this board were good. Shaking the Jiffy bag dislodged a utilities disk, but even a firm jolt failed to evict an instruction sheet. Superfluous anyway, since to reflect its low price it had not been translated from the German. Armed with this review, though, you should have no fears in this direction.

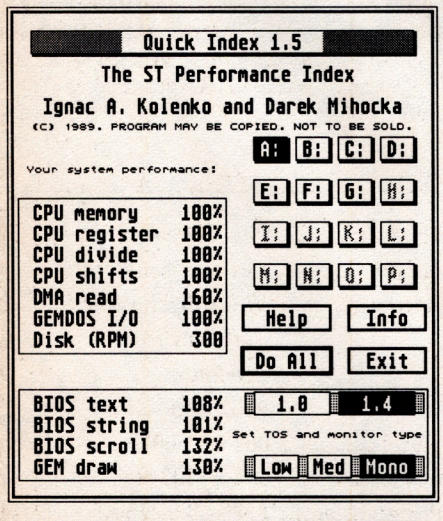
Changing Gear

With a miniature soldering iron, a desoldering pump, tweezers and a pair of wire-cutters at the ready, the installation of this board in my STFM (one with the CPU fitted at the front, under the space bar) proved straightforward. I cut the pins of the 68000 and removed them individually from the board with the tweezers, rather than attempt to extract the chip complete. Great care is needed during this step: the PCB tracks are very fine and the solder pads are easily lifted from the board by the application of too much heat. I succeeded in pulling a length of track clear from the board by tugging on a cut pin too heavily whilst the solder had not quite melted.

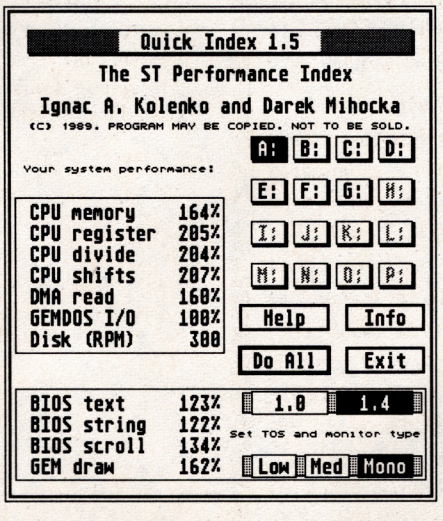
Once the pads have been cleared one of the 64-pin DIL sockets supplied can be soldered in place, followed by a close examination with a jeweller's loupe to ensure that there are no solder whiskers or dry joints. The board then plugs into place, my ST requiring a row of pins cut from the spare socket interposed at the rear of the board to tilt it clear of the MMU chip and its XTra RAM clip-on adaptor. I had previously cut a square hole in the metal shielding to fit a PC Speed board, and this may also be required. Mega ST owners use the second socket complete as a spacer, with STE owners getting away relatively unscathed with their own version of the accelerator board fitted with a PLCC adapter underneath, which then plugs straight in without further ado.

There didn't seem an easy way to reinstall PC Speed within the confines of the standard ST case, since the keyboard would not then lie flat. System Solutions sell a plastic cover that will protect the "innards" of the ST, whilst a keyboard kit allows the keyboard to be sited remotely, which would probably be the best solution if you have one of these PC emulator boards, and feel up to the task of soldering another DIL socket to the tops of the header pins projecting from the accelerator board into which to plug it. This raises quite a scenario - imagine an ST fitted into a tower case running a PC emulator with a remote PC keyboard using a DEKA interface board. The best of all possible worlds!

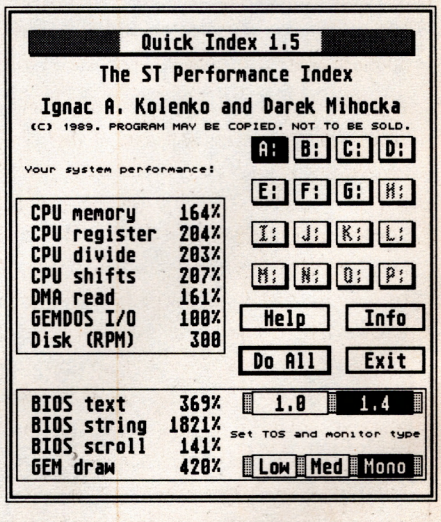
These screendumps of benchmarks show the effects of Plus Cache ST on various parts of the ST. Whilst they are useful as comparisons against other boards, it might not do to take some of the results as a direct reading of speed, since that depends, as we have already seen, upon how long the accelerator can spend working within its buffer - that's another bonus for tighter programming. Not shown is an expected increase of speed in CPU specific functions such as divide when set to 16MHz and no cache.



△ Fig. 1: The standard ST with Blitter enabled (I don't know why there is a 161% DMA speed increase, but have seen it reproduced elsewhere, so there appears to be no fault).



△ Fig. 2: With Plus Cache and its buffer on.



△ Fig.3: As figure 2 but with NVDI 2.11 on.

Foot Down

The initial power-up configuration of 8Mhz and cache on meant that the (admittedly) small handful of commercial games that I tried ran just as before (and proved no harder to play!). Plus Cache springs to life only when activated by either the keyboard combination Alternate + or the separate accessory if either it or HotKey.Prg has been loaded. HotKey.Prg may be loaded from either the Auto folder or the desktop, and the keyboard combination Alternate - switches the board back to 8 Megs.

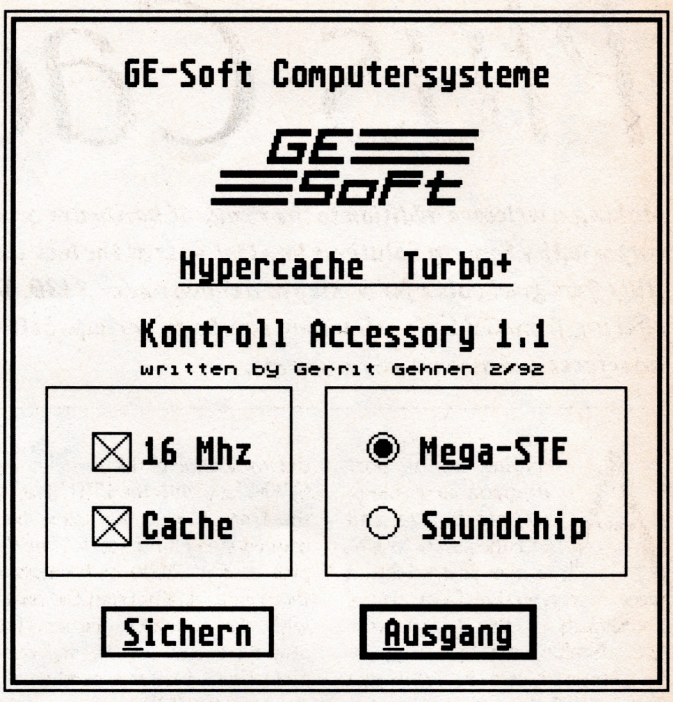
The accessory allows the same switching functions as well as the ability to switch the cache off. These settings can be saved to a data file which the accessory reads and takes action on accordingly thus setting a default configuration. The two jumpers on the board should not require adjustment from that set provided that you have specified correctly when ordering.

Giving it Welly

This is a very impressive add-on. Quantifying the amount of zest with which the ST now cruises is certainly not as easy as producing the benchmarks that accompany this article, so I'll give just a few examples of how Plus Cache can work for you. These have been chosen since it is at the output stage that most thumb-twiddling is carried out, or so it seems, after the creative flow has peaked.

- Calamus, never particularly slow at preparing a page for printing anyway, now starts my laser printing in just 45 seconds from clicking on Print. That involves not only manufacturing 300dpi bit maps, but also rotating the reasonably complex double A5 layout that is our club's publicity handout through 90 degrees to print on A4 portrait. Compare that to the 1 minute and some 35 seconds that that usually takes.
- PageStream's usual time of 26 seconds to start printing another document is reduced to nearly half at 14 seconds.
- Calligrapher now took a measly 20 seconds to start printing as opposed to 35 before.
- Plus Cache ST is reasonably easy to fit, but certain layouts may need extra work to install over and above the steps shown in this review. Like all other hardware upgrades therefore it is very important that you check the PCB layout with your supplier whilst ordering. There can also be problems with this, and indeed all other accelerator boards, and the Blitter chip (if fitted). Since that then requires exchanging Blitter chips until one can be found that is compatible makes System Solution's fitting charge worth every penny, as you can then be certain of total hardware compatibility. Software compatibility? Well, there is no way that I can test every piece of software that is available. If one should prove not to work then you can have 8Mhz at the press of a couple of keys or a desk accessory away. Thus far, no problem.

Couple this accelerator with NVDI and you have an ST that really flies. Even though the GDOS implementation of NVDI V2.11 still isn't up to working with some of the less mainstream products, it is well worth the additional investment. It's also the only screen accelerator (that I know of) that works with OverScan.



△ Figure 4

Plus Cache's configuration accessory. It's my guess that the Soundchip button is for another board that may require a hardware switch, as this board will not respond with that button selected. "Sichern" is save, and "Ausgang" OK.

Speed Increases

Looking at the test figures that accompany this review might leave one wondering why there isn't a straight 200% speed increase across the range. Unfortunately the remainder of the ST, for example all of the I/O subsystems, memory and OS ROMs are still tied to the 8MHz system clock that was, let's admit it, quite fast enough when the ST was first released.

Accelelerator boards can only strut their stuff when there is no requirement to access any part of the ST. They are able to speed up operations by "capturing" a section of memory in an on-board buffer or cache. Then by switching to 16MHz they can act on whatever program is contained in that cache at high speed, until again access is required to another area of memory. Then back to 8 Megs, snatch that area of memory, and so on. It therefore follows that the greatest speed increases are to be found when the cache contains all of the program and where no access is required to the ST subsystems, a somewhat ideal situation. Naturally the larger the cache the more likelihood of this occurring, and here Plus Cache ST has a total of 32K, split equally between cache and tag memory. The latter keeps the accelerator informed as to where to return to in the ST's memory map.

Product:	Plus Cache ST
Supplier:	Systems Solutions
Address:	17-19 Blackwater St. East Dulwich London SE22 8RS
Tel:	081 693 1919
Mail order:	0753 830344
Price:	£129.99 inc. VAT
Fitting:	£39.95

Who Gives a TOS?

TOS 2 T_Board ~ Review by Paul Rossiter

The software writers at Atari have come in for severe criticisms over the years, much of it well founded. The early ST's (up to 1.4) had only 192KB of code space to play with and so to a certain extent the programmers were hampered. The STE and upwards, however, can use 256KB for their ROM code (TT 512KB), which allows greater freedom and the inclusion of Neodesk-type features to be incorporated in the ROMS. The disadvantage is that the address location of the ROMS has been moved from the STFM to the STE. This prevents an easy inclusion into an FM.

TOS 2 in the STFM

The old ST's have their ROMS at hex address &FC0000; the STE has moved the ROMS to hex &E00000. In the ST the 'GLUE' chip provides address decoding and produces ROM select signals whenever an address in the ROMS addressing range occurs. The code in TOS 2 is not position-independent, and so extra ROM addressing signals have to be provided. The T_BOARD from COMPO solves this problem by having an address decoder on it. This is formed from a PAL chip, specially programmed by COMPO, which takes in the CPU addresses and produces ROM select signals as required.

All that remains is for the new TOS to be enabled. Software is provided which may be used as an accessory or as an AUTO program which allows switching from the existing TOS (which is not touched during the installation) to TOS 2. Don't expect to be able to switch TOS on the fly: it re-boots when switching from one to the other.

Fitting

The TOS T_BOARD has to be attached to the 68000 processor. On the FM the 68000 is a long thick 64-pin DIL chip. A socket is soldered on top of the 68000 and the T_BOARD simply plugged into the socket. A neat feature gives through connectors to allow extra expansion such as a PC emulator to be simply plugged in to the top of the T_BOARD. See figure 1.

The board comes with fairly good instructions, and the only omission that I could find was that on some of the later FM's the power supply is held in place with an extra (third) screw which can only be undone by removing the main PCB from the case first. Prising with a screwdriver will cause real problems.

During installation the only likely problems are that on some boards there are SIL resistor packs which are very close to the 68000, preventing easy access for the soldering iron. These may be gently bent backwards to allow rather better access. As mentioned in the notes, take your time and make sure that you avoid damaging the board with electro static discharges.

It is well worth checking that the ST still works before plugging the T_BOARD into the socket. If it doesn't then the most likely cause is a solder bridge between two legs on the 68000. Removal of the bridge should clear the problem. If the ST works but the T_BOARD doesn't, then check for bad joints on the soldered legs of the socket: they must all be perfect. A jeweller's magnifying glass can be very helpful here. Use a lens of around 4-8x magnification.

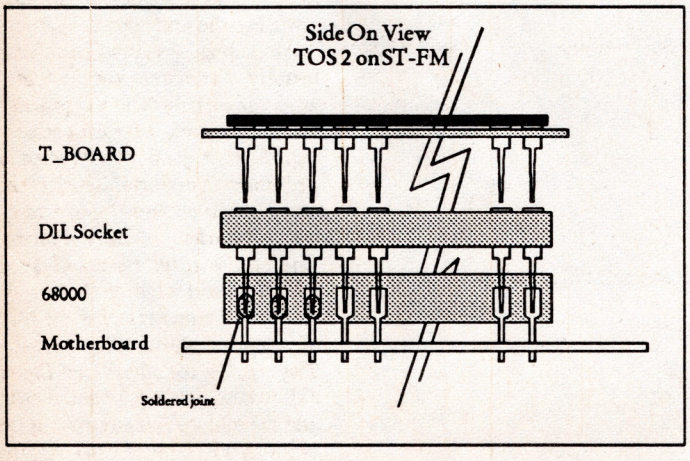
TOS 2 in the STE

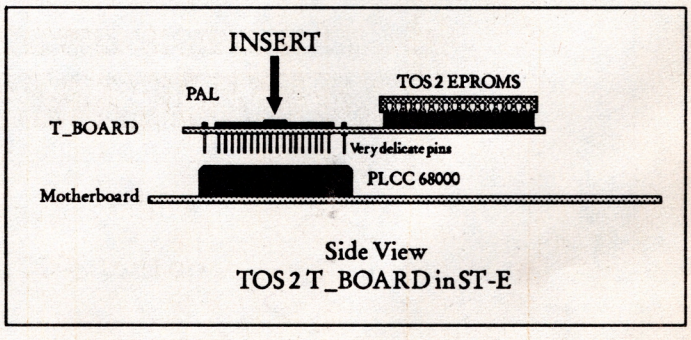
When Atari designed the STE they decided to use the square 68-pin PLCC package for the 68000. This is usually in a socket which allows the T_BOARD to be easily plugged into it.

STE owners have a choice when it comes to fitting TOS 2. Firstly, they can just swap the ROM sets, which is by far the cheapest option but obviously denies access to any software that will only run on pre-TOS 2 ROMS. Secondly, a T_BOARD or similar can be installed to allow access to both TOS1.6 and 2. The T_BOARD, incidentally, also doubles as an adaptor for AT Speed. It simply plugs into the 64-pin DIL socket provided.

Fitting

The T_BOARD for the STE is





similar to the one for the FM in having a PAL chip, two TOS 2 chips and a 64-pin DIL socket for PC emulation, but differs in having a set of pins which are intended to be plugged into the square 68000's socket - see figure 2. Whilst this sounds simple, the process of getting the board's pins into the socket without bending any of the legs can be quite tricky. Once this is achieved there are a few wires to be soldered to the existing ROMS. If the main PCB has soldered in ROMS then legs need to be cropped, which is quite a difficult task for the inexperienced.

Problems

The quality of the four layer boards is very high and should not themselves present any problems. Most problems will arise from the installation process. Check and double-check all soldered joints, ensuring there are no solder bridges or dry joints before switching on. In the case of the STE make certain that the pins are straight and all going into the 68000 socket together. Any buckled pins can easily ruin the socket, necessitating an expensive repair. One adverse comment here for COMPO: the T_BOARDS come in a nice anti-static bag, but protecting the pins from damage is a slab of expanded polystyrene, one of the worst static generators.

Conclusion

Whilst TOS 2 is an improvement on earlier TOS versions, TOS 1.4 or TOS 1.6 used in conjunction with NeoDesk is still a better combination than TOS 2. Whether the cost can be justified is up to the individual. The extra features of TOS 2 are mainly concerned with easier file manipulation, which also requires a hard disc to be truly effective. If TOS 2 is seen to be a desirable upgrade then the quality of the Compo Board could not be bettered and together with their reputation for after-sales support and advice it must be highly recommended. But if there are any doubts at all then don't try and fit it yourself; it can all too easily end in tears!

The TOS 2 T_Board is available from:

Compo Software
Tel: 0480 891819

Soldering

Good soldering is a skill which can take many years to master. The possession of good equipment, whilst helpful, does not guarantee a good soldered joint. If any reader is contemplating fitting a soldered upgrade or indeed doing any fine electrical soldering, the following section may provide a few pointers along the road to good joints.

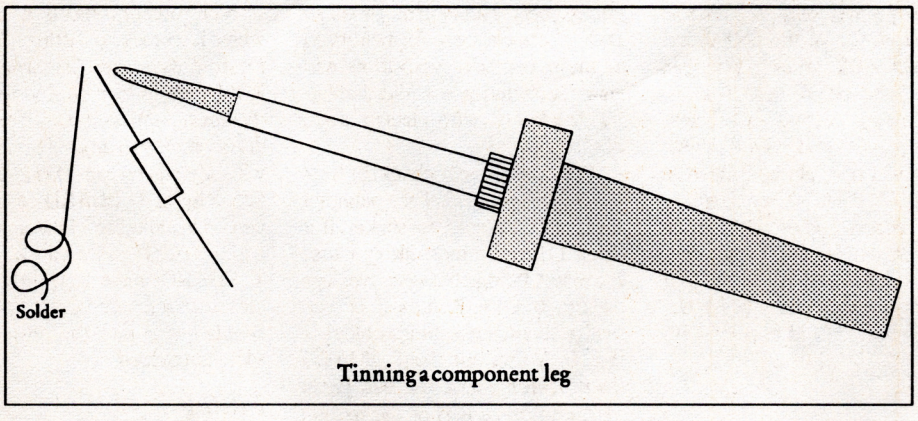
Equipment

It is useless trying to solder fine delicate joints on a modern high density PCB using great-grandfather's old gas-heated iron with plumber's solder and carcinogenic, highly toxic flux. The consequences of using poor tools may well result in a total write-off of your beloved ST! The minimum set of tools required is listed here, with typical part numbers shown from the ubiquitous Maplin's catalogue.

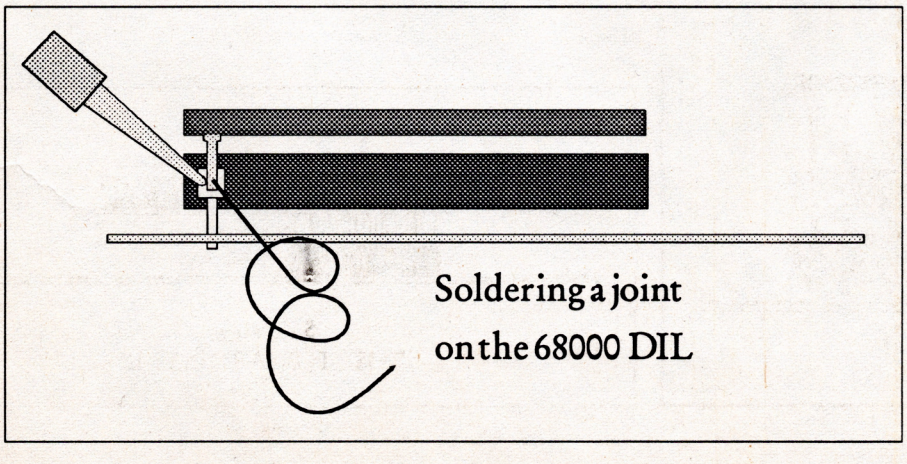
- Selection of screwdrivers in various sizes
- Snipe nosed pliers JH26D
- Side cutters JH27E
- Soldering iron YZ74R with fine bit

and a few desirables:

- Solvent spray LH02C for cleaning flux off PCBs
- Desoldering pump FR26D for removing components
- Wrist strap FE29G to avoid static damage
- One inch paintbrush for cleaning flux residues from PCBs
- plus, of course, some fine (22SWG) multi-cored electronic solder and a steady hand.



Tinning a component leg



Practice

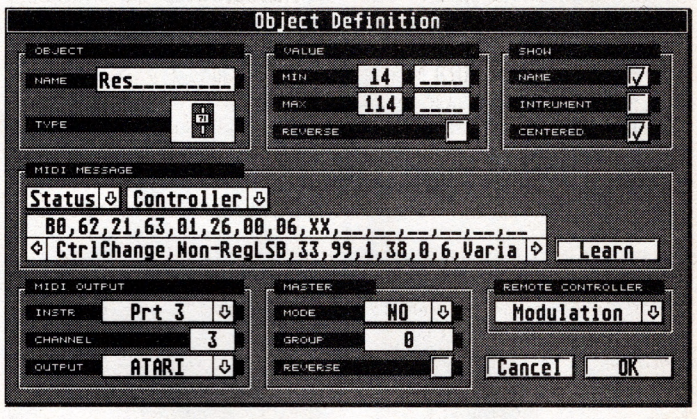
Before attempting any work on a precious machine it is imperative that considerable experimentation be done on a scrap board until it is felt that a reasonable degree of proficiency has been reached.

In order to produce a good joint, both surfaces must be 'tinned'. This involves heating each surface in turn and applying a small amount of fresh solder. This gives a nice, clean surface ready for soldering - see figure 4. Even if the legs of components look clean and tinned a fresh coat of tin will do no harm. Once tinned the surfaces are brought together and the soldering iron positioned so as to heat both surfaces; once hot, a small amount of solder (typically 3-4mm) is added to make the joint. This whole process should take only a few seconds. (Too short a time will cause a dry joint, too long may damage the components.) A good joint will look shiny and smooth, covering the component legs in a hard coating of solder. Dry joints usually have a crazed or dull appearance; only time and practice will allow rapid, successful soldering. A poor joint can become a nightmare; it can exhibit high resistance and be prone to failure, especially if under mechanical stress. One of the main causes of poor joints is to add solder to the iron tip and then try and transfer the blob of solder to the mating surfaces. The correct technique (see figure 3) is to heat up the joint and then to add the solder. This ensures a good joint as all surfaces are at the correct temperature.

In Control

Last month I started a short series about MIDI controllers and how they can be used to enhance MIDI sequences. This time a look into how non-registered parameter numbers work and how you could use them to modify sounds on a GS compatible synth. Although most of the examples are shown with Cubase, the information equally applies to other sequencers.

Ofir Gal



△ Figure 1

GS vs. GM

There seems to be some confusion regarding GM and GS and the difference between the two. GM stands for General MIDI and is an optional protocol defining several features of a synth. It concentrates on program change numbers and the standardisation of controllers. Reverb and chorus amounts have been allocated controllers #91 and #93 respectively. A synthesizer may or may not have GM compatibility. GS on the other hand is Roland's own standard. Roland claim it to be fully GM compatible which is arguable. It does however, offer further enhancements to General MIDI. Most importantly, GS synths can have almost any parameter edited in real-time via a non-registered parameter number, or NRPN for short.

If you own a GS synth such as the Sound Canvas or JV30 you will find a list of all the NRPNs at the back of the manual. An NRPN consists of an MSB and LSB combination, vibrato rate for example is $01 $08. Table 1 lists all GS non-registered parameter numbers. NRPNs are set to a centre value by default, 64 normally. This is more convenient than direct parameter editing via sysex, because you can always return to the original sound by setting the NRPN back to 64. In other words, changes are relative and not absolute.

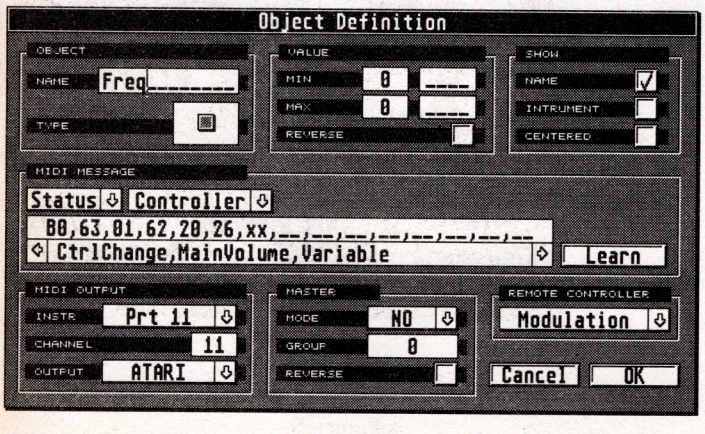
Real Time Control

There are many ways of using NRPNs and I will demonstrate a few here, but I am sure you will be able to come up with other ways of going about it. In its simplest form an NRPN message is very similar to the RPN message from last month. Like RPNs, two controllers are used to set the parameter number. The two controllers are 98 and 99, or 62 and 63 hex. To select TVF resonance, controller 63 selects the MSB which is 01, and controller 62 selects the LSB which is 21. The following message sets the TVF resonance to maximum. All values are in hex.

B0,63,01,62,21,26,00,06,7F

The general format sets the status byte to control change $B0. This is followed with $63 which is the controller number used to set the MSB of the NRPN. Next is the MSB of the NRPN. The next couple of bytes are $62 and the LSB part of the NRPN. The last four bytes are the MSB and LSB of the actual value for the parameter. The MSB must be set to zero and is reserved for future use.

Confusing as they may be, NRPNs are very effective. Creating an object like this in Cubase (figure 1) or Creator gives you a sweep filter resonance control. Coupled with another object to control cutoff frequency it can produce those much sought after 70s style analogue filter sweeps.



△ Figure 2

There is no substitute for real physical faders, especially when it comes to controlling subtle changes in sound. If you have a data entry slider on your master keyboard, or any other slider or modulation wheel, you could use these instead of fiddly screen objects. The idea is to generate part of the message using a screen object and the rest with the physical fader. This is allowed for in the original MIDI specifications. Once the NRPN is set, any change of controller #6 will affect that parameter until a different parameter is selected or some reset message is received. Most synthesizers have a data entry slider which sends controller #6 messages by default. The message to initialise the parameter is:

B0,63,01,62,20,26,00

This will effectively turn the data entry slider into a filter controller. With Cubase a MIDI Mixer object definition should be:

B0,63,01,62,20,26,xx

The value range should be min=0, max=0 and the object should be a switch. This is shown in figure 2. Clicking on the switch sets up the parameter. Moving the data entry slider changes its value. This system is also more 'economical' on MIDI events because the longer message to set up the parameter is only sent once.

Not all synthesizer or master keyboard controllers have a data entry slider, and even if they do, in some cases it does not output controller #6 messages. Most sequencers enable you to re-map the controllers. Using such a facility, you can temporarily re-map the modulation wheel to controller #6 as is shown in figure 3.

Recording Real Time Parameter Changes

The actual recording process depends on whether you use the MIDI Mixer in Cubase or a different sequencer. Even within Cubase there are various ways of going about this and you will have to experiment until you find a system you are happy with.

Recording will normally consist of two separate steps. First, the parameter select message should be recorded. This can be generated with MIDI Mixer event. Alternatively, the three events that are required could be generated manually by inserting the events into a list (grid) editor. Figure 4 shows an example of this. Once the parameter select part is recorded you are free to record data entry slider movements. It's best to record these on a separate track and later 'thin' the events using Reduce Cont Data or a similar function.

Drum Edit

It is also possible to edit individual drum sounds using NRPNs. The message is a little more complex because it needs to indicate the actual drum sound to edit. This is allowed for in the way Roland have defined the message. The MSB selects the parameter while the LSB is the note number of the drum sound.

To change the reverb level of

the side stick for example, the following message is used:
B0,63,1D,62,25,26,00,06,xx
or
B0,63,1D,62,25,26,00
1D is the parameter number MSB for reverb level and 25 is the note number for C#2. The second message is simpler and is based on the set parameter principle demonstrated earlier. In the MIDI Mixer, you must have a variable in an object definition and the second line will not be accepted. Simply replace the last 00 with xx, set the value range to min=0, max=0 and set the object to be a switch. To change the reverb level, click on the switch and then move the data entry slider on the master keyboard.

There are over 60 drum sounds, each can have level, pitch, pan, reverb and chorus control. That is over 300 sliders and/or buttons, too many to fit on screen. It is also very unlikely that you would need to change each parameter. One possible alternative is to create an object where the variable is the note number. The message should be:
B0,63,1D,62,xx,26,00
The ideal object for this is a dial which selects the note number, effectively the drum sound that will be controlled. The parameter is 1D for reverb. As before, the data entry slider is used to actually change the reverb amount. Figure 5 shows one possible setup.

Next Month

If you have any questions or comments please contact me via e-mail: ogal@cix.compulink.co.uk or write in to the ST Club. Next month I will take a closer look at MIDI implementation charts.

Hexadecimal Numbers

***Most MIDI** implementation charts use the hexadecimal numbers system which most MIDI users find daunting. Conversion charts can help, but it can be irritating having to constantly refer to a table. It is much better to understand how the system works.*

The decimal system which we use daily is based on the number 10. Each digit in a number has its value multiplied by 10, 100, 1000, and so on. The number 1529 for example, is made of 1 x 1000 + 5 x 100 + 2 x 10 + 9 x 1 = 1529. The hexadecimal system is based on the number 16, where each digit is multiplied by 16. The number 32 in hex means 3 x 16 + 2 x 1 = 48 + 2 = 50. While the decimal system has 10 digits (0 to 9), the hexadecimal system requires 16 digits. The six additional digits are borrowed from the Roman alphabet. The letters A to F represent the decimal values 10 to 15.

To convert a MIDI hex value is quite simple because MIDI hex values only have two digits. The value 51 is simply 5 x1 6 + 1 = 80 + 1 = 81. 4B is slightly more difficult; B stands for 11 decimal and so 4B is 4 x 16 + 11 = 64 + 11 =75.

Coverting decimal values to hex is a case of dividing the decimal by 16 to obtain the left digit. The remainder is the second digit. To convert 100 decimal to hex, 100/16 = 6 remainder 4 = 64 hex. 122 to hex is: 122/16 = 7 remainder 10 (A in hex). So 122 decimal is 7A in hex.

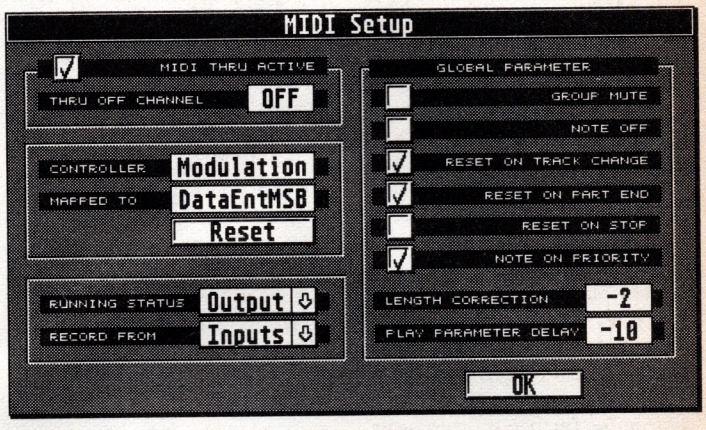
There is no standard way of denoting hex numbers, but normally numbers are either preceded or ended with '$' or 'H'. More about this next time.

Table 1

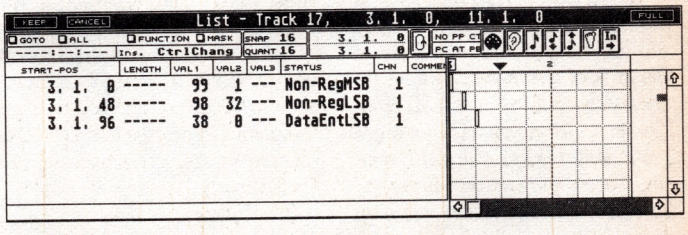
Non Registered Parameter Numbers

Vibrato Rate	$01	$08
Vibrato Depth	$01	$09
Vibrato Delay	$01	$0A
TVF Cutoff Freq.	$01	$20
TVF Resonance	$01	$21
TVA Attack	$01	$63
TVA Decay	$01	$64
TVA Release	$01	$66
Drums		
Pitch	$18	$nn
Level	$1A	$nn
Panpot	$1C	$nn
Reverb Send	$1D	$nn
Chorus Send	$1E	$nn

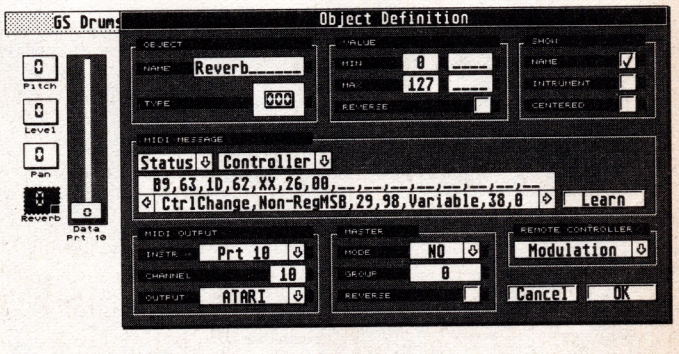
**nn stands for key number*



△ Figure 3



△ Figure 4



△ Figure 5

Desktop Publishing with the Atari ST

Part Five: Space between letters, words, lines and paragraphs

Günter Minnerup

Typography is both an art and a science. The scientific side concerns readability, the criteria for which have been tested in countless experiments and with quite unambiguous results: the human eye is quickly tired by text which makes it work too hard to establish meaning. If the space between words is too large or too small the eyes must work too hard, and the same applies to the space between lines. Too many words in one line are also bad, as are too many words broken (hyphenated) between lines. But, and this is where the "artistic" element comes in, a page must also "invite" the reader to read by giving a pleasing overall impression. Different settings give a different "texture" or "colour" to a page as much as the use of different typefaces does, and the only effective way of judging the effect is to flow a piece of "dummy text" into the columns to fill the page, print it and judge the result by holding it away from you at slightly more than usual reading distance.

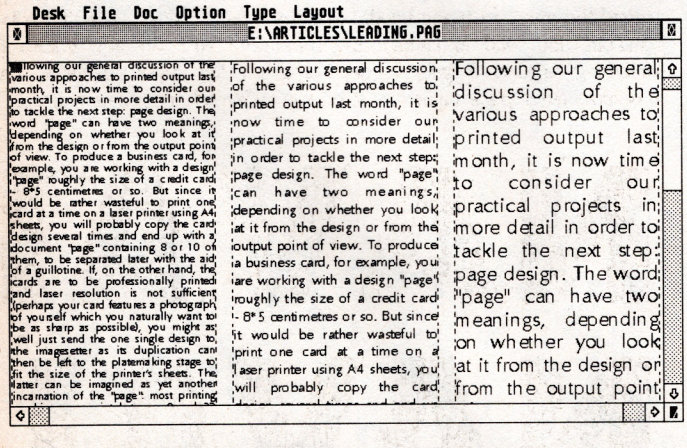
It is impossible to give foolproof standard settings for line and wordspacing that will work in every situation. The main considerations are as follows:

◆ The longer the line (dependent on the column width and type size), the more linespacing (leading) is required. The space between the lines should always be larger than the average space between words to prevent the eye being distracted by words on the previous and following lines. Try to avoid lines of more than 12 words or so by increasing the point size if necessary. Very short lines also create problems with wordspacing as the software will tend to insert too much space for justification. The answer is to either set these ranged left (left justified, ragged right) or to enable hyphenation.

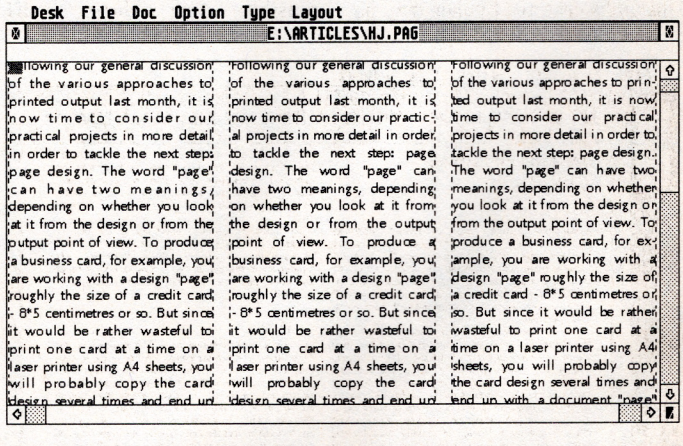
◆ Most DTP programs are too generous with wordspacing anyway, so be prepared to change the default value if the software allows this. But avoid trade-offs between word and letterspacing: inserting extra space between letters for justification purposes is very poor typographical practice, even though it is often seen these days. The only legitimate trade-off is between tightness in wordspacing and hyphenation frequency - when too many lines get hyphenated you will just have to allow for a little more wordspacing.

◆ Linespacing should not be defined arbitrarily but in relation to the column height, using the formula "(Point size + extra leading) x number of lines per column = column height". This ensures that the text lines fill the columns completely and that columns align perfectly provided that every line, including heads and subheads, occupies an integer multiple of the basic line unit. Each typeface already allows for some linespacing but the amount varies with the design - faces with large x-heights (the height of a small "x", would you believe) appear larger than others at the same point size and will need more leading.

◆ Inter-paragraph spacing is only necessary when the first lines of paragraphs are not indented. When used, it is preferable to insert a full blank line rather than anything more or less because



△ These three columns illustrate the relationship between column width, point size and linespacing (leading). Although they are all of the same physical width, the different point sizes make for longer or shorter text lines, which in turn affect the amount of leading required: the text lines in the left column are set solid, without any extra leading, and too close together with the ascenders and descenders almost overlapping. Despite the more generous linespacing, the right-hand column has the same problem but for different reasons: the short, unhyphenated lines have more space between the words than between the lines. The central column shows a good combination of line length, point size and leading.



△ Relatively narrow and fully justified columns raise the problem of excessive inter-word spacing that makes "rivers of white" flow through the text lines. On the left, wordspacing has been traded off against extra letterspacing, with predictably ugly effects. The central column uses hyphenation to spread long words over two lines but the word spacing is still too generous. Reducing the default setting for wordspacing (right column) makes for a much better appearance without unduly increasing the frequency of hyphenation.

multi-column setting on one page will then still remain aligned.
Do not underestimate the need for experimentation at this stage. A slight alteration of the wordspacing (almost always a reduction) and half a point extra leading can make all the difference in producing an attractive, readable page of text. Single-column setting as in books is relatively easy as the long lines minimise the problems which arise in the allocation of extra space for full justification, while multiple columns, especially several narrow ones, require a lot of balancing to get them right. If all else fails, playing around with the point size can solve a many a tricky problem.

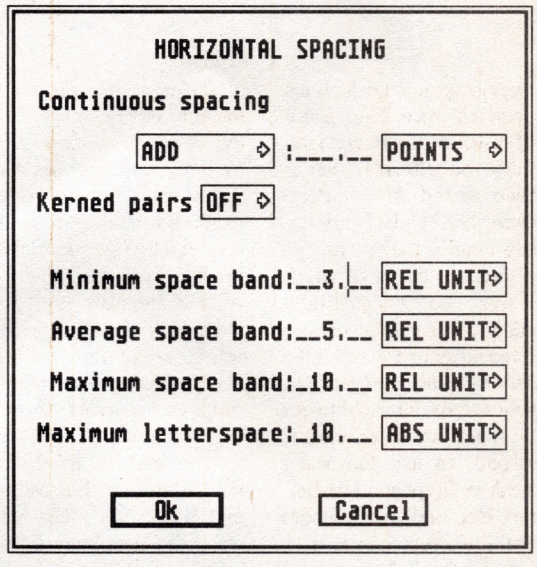
Things are much easier, of course, if text is set ranged left. Full justification tends to be overused in desktop publishing, presumably in the false belief that it distinguishes professional "typesetting" from amateurish "typewriter" output. I have already indicated that with very narrow columns, the problems inherent in full justification suggest ranged left setting as a necessity, but it can often be preferable for aesthetic reasons to give a more informal look or to distinguish editorial intros, quotes and captions from the main text. Captions can be made to "stick" to a picture by ranging them left or right against its nearest side, and headings should never be fully justified to avoid unnatural wordspacing and hyphenation. The same applies to correspondence: before the advent of DTP, no hand-written or typed letter ever had clean right edges anyway. Always disable hyphenation with unjustified text: the odd manually-inserted hyphen may be necessary in ranged-left text to break an extremely long word, but in ranged-right setting the hyphen only disturbs the clean right edge - real purists insist that hyphens belong outside the text column anyway, as was the practice in those beautiful medieval manuscripts. Headings are never, ever hyphenated.

Many DTP users confuse the terms "tracking" and "kerning". The former refers to the global adjustment of letterspacing for the whole text or a defined section of it, whereas the latter covers spatial adjustments between particular pairs of letters. Tracking is also often mixed up with compressed or expanded setting which reduces or enlarges the horizontal size of the characters rather than the spaces between them. Neither tracking nor compression/expansion should normally be necessary unless you wish to achieve a special effect, and even then should be deployed with extreme caution as they tend to upset the natural balance of a type design.

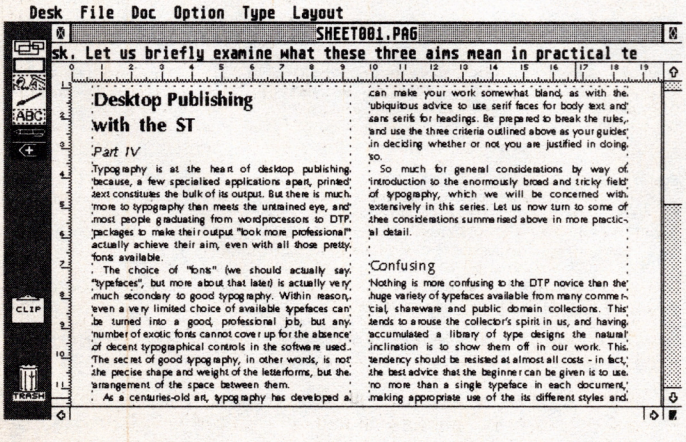
Kerning, however, is almost always essential whenever type is set at larger than normal body text sizes. The reason for this is that the white spaces between letters are more obvious to the eye when everything is enlarged proportionately, and this affects some letter pairs more than others. If you tried to counter this effect by reducing the global letterspacing, some combinations would appear too close together, so "kerning" is applied only to certain pairs such as "AV" or "To". Calamus fonts use "step" rather than "pair" kerning: this means that characters are always set as closely together as possible which reduces significantly the amount of manual kerning needed for large headlines but tends to push low-resolution, laser-printed body text too closely together, especially at small point sizes.

The fine judgements involved in all these decisions, from wordspacing via leading to kerning, underline the need for a good screen display to minimise the number of printed proofs required. Vector fonts obviously have the edge here, especially if the software allows for zoom levels up to the printer resolution, since bitmapped screen fonts will only give an accurate picture if they are available at all point sizes and magnification levels - usually impossible because they would eat up all your hard disk space! This is also one reason why professionals have large monitors, capable of displaying a full A4 page, or even a double- page spread, at 100% magnification: used eight hours a day, five days a week, the extra cost of such a beast will soon be offset by savings in paper and toner on unnecessary hardcopy.

Next month: Importing and editing text.



△ Every serious DTP program should have sophisticated means of changing the default settings for word, letter and continuous spacing (tracking) such as provided by this dialog box in Fleet Street Publisher. These values provide the parameters followed by the software when justifying a line of text: word spacing will not be less than the minimum space band, no more than the maximum space band and generally around the average space band. I find the default values shown here too generous and tend to reduce the maximum and average values to something around 6 and 4, depending on the typeface used. The maximum letterspace value can also be greatly reduced, even to zero.



△ Tip of the month: to keep columns aligned, make sure that headings and subheadings are set at integer multiples of the standard body text sizes (point size plus leading). This is easier than relying on vertical justification - assuming your software offers this feature at all - because you do not have to set the parameters for vertical space allocation, and achieves more pleasing results.

△ The word "naval" set in 72-point caps, first without and then with kerning pairs enabled. Look closely at how the V fits more snugly between the two As when kerned. Further manual adjustments are often necessary - in this example, the N and A could perhaps be brought together more closely to the distance found between the A and L at the end of the word.

Beginners' Forum

Mark Baines

RAM Disks

In the last two articles I wrote about the structure and copying of disks. Most of what was contained in those articles referred to physical disks such as floppy disks whilst some of it pertained to hard disks. There is, however, a commonly used disk which doesn't have a physical form, costs nothing and is the fastest there is - the RAM Disk.

A virtual disk

A RAM disk is not a disk at all but a part of your computer memory which has been set aside by a program to act like one - a virtual disk. That is, you can assign a desktop icon to it, double click on it to open the directory window and copy files to and from it. To all intents and purposes, it behaves like a floppy disk except that operations on it are much faster and that file storage isn't permanent. When you switch off or reset your ST the contents of the RAM disk are lost forever, just as any other data in your RAM would be. However, some RAM disks try to overcome some of this disadvantage by being reset-proof. Performing a soft-reset (pressing the reset button or Control-Alternate-Delete on TOS 1.4 or later) will not clear the memory contained within the RAM disk. This means that after most crashes the contents of the RAM disk may still be preserved. This sort of RAM disk is the only one worth considering, in my opinion. Another problem is that not many RAM disks set themselves up with a proper boot sector and BPB or Bios Parameter Block - remember them? (see Issue 29). TOS never sees them as proper disks and gets confused when performing some functions on them. For instance, if the RAM disk looks exactly like a floppy disk to TOS you can do a disk copy from it to a floppy or vice versa. Also, when using the desktop Show Info... menu item the amount of free memory shown may not be accurate. Disk diagnostic programs and disk checkers also get confused and can report garbage when asked how many sectors or tracks it has. EDISK v2 has a proper boot sector.

RAM disks are much of a sameness really and so programmers try to add on various features such as a mouse accelerator, printer buffer or screen saver (RAMPLUS has all three), or improve the functionality of the RAM disk itself. Some RAM disks are expandable in that its capacity will grow or shrink according to its contents. This is an excellent facility as the RAM disk will never occupy more RAM than is necessary which is good for small memory STs.

Another variety of RAM disk is the compression type, where you set the initial size of the disk, say to 300K, and the RAM disk compresses the files you put in it just like LHARC or ZIP. This can slow down file copying but effectively increases the size of the RAM disk which will depend on the types of files placed in it as some compress more than others. MAXIDISK is an example of this type of RAM disk.

Some RAM disks have a facility for automatically loading in files from a floppy or hard disk when installed. The list of files to copy to it is either hard written to the file when it is configured or it can be contained in a separate ASCII data file which the RAM disk program reads. The latter type is more convenient.

RAM disk uses

One of the reasons for wanting to use a RAM disk is to speed up the disk accesses of certain programs that continually read data from them. These programs include databases, such as Superbase which never reads more than a few records into memory at a time and constantly accesses the disk. On a floppy disk only system this can be very frustrating especially when searching or making queries. Comms users will be also be aware of how slow off-line readers can be from floppy disks. These programs also load in one message at a time for the user to read, again slow and annoying. One answer is, of course, a hard disk but not everyone can afford these although the prices of them have come down enormously lately. A large RAM disk, say 1MB in a 2 or 4MB system, often solves many of these problems once all the files are loaded onto it. To have a RAM disk on your application's boot up floppy disk that does this automatically for you makes the whole procedure neat and efficient. Having set up your application to work from and look for its data files from your RAM disk, say drive M instead of drive A, you have a faster system than a hard disk equipped machine. However, you always have to remember to save any data and configuration files back to the floppy disk before switching off, so that although much of the use of a RAM disk can be automatized, care and good management is required at the end of the day.

Another common user of RAM disks are programmers, especially those using compilers with a large number of function library files or those making temporary scratch files whilst compiling a source file. Using a RAM disk for the temporary files, even on a hard disk system, speeds up compilation of the program. On a floppy disk based system the required libraries, source files and header files could be placed in the RAM disk. Experimentation will often result in enormous savings in time with the added benefit of weaning you off all that caffeine from the umpteen cups of coffee you would normally make whilst waiting for the compilation to finish! Reset proof RAM disks are a necessity here because the inevitable crashes from testing your program will otherwise lose their contents.

I often use my RAM disk as a Clipboard and many programs now available are supporting Atari's official Clipboard standard. Instead of designating a folder on my hard disk as the temporary storage space for cut and paste operations of programs and ultimately cluttering it up with extraneous files, you can make the RAM disk the clipboard with the benefit that the files are lost when finished. If I want these temporary files to be permanent then I can call up UIS III or another utility and copy them elsewhere, but this is usually not necessary.

RAM disks are also useful when copying files from one disk to another. When I get some PD disks I quite often I want to selectively copy some of the files to various places on my hard disk from the floppy and maybe read the doc files that go with them as well before deciding, after decompressing them, whether they are any use to me. Copying them to the RAM disk makes decompression and the reading of the doc files a lot faster and convenient.

Hard drive users with many nested folders will know what a nuisance some TTP programs can be when you are forced to type in long path names of files in the TTP dialog and get them wrong! One invaluable program compares two texts files (thanks Paul H) which may be buried on the hard disk, this TTP file being on another partition and folder. So instead of typing

D:\PROTEXT\DOCS\MISC\FILENAME.TXT D:\PROTEXT\DOCS\MISC\FILENAME.BAK -OC:\SCRAP\DIFF.LST

I copy all the files to the RAM disk to give

FILENAME.TXT FILENAME.BAK -ODIFF.LST

which is much better!

Some technical stuff

But where does this RAM disk go in your available memory? Can it just go anywhere? The MC68000 Central Processor Unit in your ST or the MC68030 in the TT or Falcon finds out where the physical end of the available RAM is by looking up a System Variable called phystop stored at memory location or address 1070 to 1073 or $42E to $431 ($ denotes a hexadecimal number). On a 512K ST, the value of phystop will be $80000 (524,288), $100000 (1,048,576) on a 1MB ST and $400000 (4,194,304) on a 4MB ST. (This only applies to ST RAM on a TT.)

Why does the CPU need to know where the end of its RAM is? Well, firstly, it's the primary indication of how much memory is available to it and how far it needs

to go when clearing the memory, moving blocks about and assigning blocks for use by a program. Usually, the screen memory resides just below the value of phystop, say from $3F8000 to $400000 on a 4MB ST. This is not an area of RAM which is available to the user and so another system variable called _memtop (at $436) contains the address of the last user available memory location. The system variable _membot ($432) tells the CPU where the start of the user memory is. The memory available to a user is called the TPA or Transient Program Area and the amount is therefore decided by taking the value of _membot away from the value of _memtop. The RAM disk could go in this TPA but it wouldn't necessarily be protected from the actions of other programs or from the operating system demanding memory for another process. When you load programs into a ST, they will clear the RAM above them unless you use the AUTO program PINHEAD or set the Fastload bit in the program header in TOS 1.4 and above. What's more, when the computer is reset the CPU clears all the memory up to the address contained in phystop. To protect the data stored on the RAM disk during a reset the RAM disk needs to be placed above the address contained in phystop which is impossible as there isn't any memory there. But, if the program that installs the RAM disk writes another, lower address to the phystop system variable then the CPU will be fooled into believing that the total amount of RAM it has is less and not know about that above phystop. This will have to be done from the AUTO folder before TOS sets up the screen memory area which will reside as usual below phystop and the RAM disk. This is the ideal set up of a RAM disk and it has to be said that some can be installed from the Desktop and if so, will normally reside below the screen area memory. In that case, if you fill up your RAM disk to capacity you often get bits being written all over the screen as the RAM disk overflows into that memory. It may even overflow into other areas and result in a crash. A well written RAM disk program should prevent that.

Setting one up

To obtain a RAM disk you need one of the many PD or Shareware programs that will set one up for you. I suggest you get hold of PD disk UTI.275 from the ST Club which contains the best PD RAM disks available, especially RAMPLUS, EDISK, ETERNAL and MAXIDISK. I see no reason to have to buy a commercial product. Most of these programs enable you to configure the features you want from them, especially the drive letter and size and they then produce a RAM disk program file which you then place in the AUTO folder of your boot up disk. When you then boot up you won't see any change on the Desktop. Click on Drive A and go to the Install Disk Drive menu item and rename the Drive Identifier to the letter you have already decided on. You can't use the letter B and I suggest you don't use C either. Drive C is normally the reserved for the first hard disk partition and your system will then expect to find the DESKTOP.INF, ASSIGN.SYS and other files there. In fact, when you save the Desktop it will be saved to C instead of A. Any letter up to and including P is available. M for Memory is commonly used. Change the Icon Label from FLOPPY DISK to RAM Disk or whatever you want. For TOSes 2, 3 and 4 the Icon Type should be Drive and you can select whatever Icon Shape you want with the arrows. Now click on Install (TOS 1) or OK (TOS 2, 3 and 4) and you will see a new drive icon on the desktop. Drag this to where you want and then save the desktop. Double click on this icon and you should have an empty directory window.

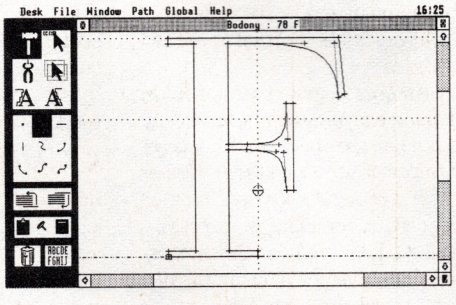
If you can think of anything that I ought to cover in this column then send me a letter, but please remember that I cannot deal with specific program and hardware problems unless it appears to be of common interest. Thank you for the letters received so far. Although I can't promise to respond to all personal queries, I'll do my best. An SAE certainly helps!

Mark S Baines,
Beginners' Forum, Linnhe, Shore Street, Inver by Tain, Ross-shire IV20 1SF.

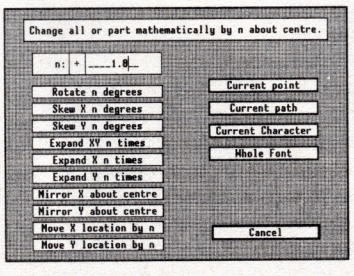
Fonty

Calamus Font Editor

This is a fully featured editing program for creating and editing Calamus CFN-format font files. Also, when used in conjunction with C-Font or Fontkit Plus, CFN files created with Fonty can be used to generate sets of bit-mapped fonts for use in packages such as: K-Spread4, Degas Elite, Timeworks DTP, Calligrapher, That's Write, Redacteur 3, and Wordflair.



Fonty features include: draw mode icons (Hammer mode, Pliers mode, Move mode, Select path mode, left and right kern mode), Grids and Guide Lines, Manual and Automatic kerning, Backgrounds for tracing (a Degas picture or a complete GEM font), a full feature Calculator to mathamatically manipulate fonts, and Window scaling. A separate program, PFB2CFN, reads a Postscript Type 1 Font file and copies it into a Calamus CFN font file.



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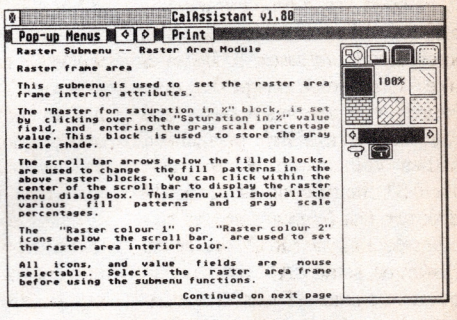

- CalAssistant is an accessory program that runs on top of the Calamus software providing online help for each function.
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Grafix Arts

This month Paul Keller talks about some ideas on drawing plants on our ST computers and the main approaches to this, including the plant life you might find in a vase from your own house.

TECHNIQUE – Flora

Colour Flora Palettes

If drawing flora the first factor to consider, as always, is the colour palette of the picture you are drawing in relation to your reference.

With computers like the ST you have plenty of colours to choose from, 4,096 on the STE, more than enough for the beginner and even most professional artists. It certainly saves mixing colour paints and any water spillage by using this modern paint medium instead of the more traditional materials.

As an example palette brown and green are going to be needed, perhaps 4 brown, 4 green, 1 blue for the sky, 1 black for border, and that only leaves us with 6 colours to play with, if using a 16-colour palette art package. 16 colours can be used up very quickly in our palette selection and so to capitalize on this we need a colour which can be integrated with both the brown and green. In most cases I would use a yellow-brown and a yellow-green colour with a brighter yellow for both. That means that three colours remain spare, which would then be used for the areas in the picture reference where more colour might be needed. For a different area of colour such as a river, two blues would be used; while still being able to utilize the lighter blue sky with the blue river colours, a bluey green might be used for any background mountains on the horizon as our final colour.

Trees

It is best when drawing trees to start with the bare tree trunk and when you have its basic outline you can either use the airbrush or stipple to create any foliage over the top of this. If using the airbrush make sure you use a multi-coloured one, that way you can quickly spread more colour and variation onto your picture. Depending on the size of your tree being drawn select your airbrush size, i.e. for a large tree use a larger airbrush and faster speed, for a small tree use a smaller airbrush and slower speed.

Keep some space for the branches to show through underneath your leaves. The tree trunk detail and branches are best created by use of the K-line command and you need to remember where your light source is when adding this detail. It is a good idea to layer these lines in order of brightness, e.g. dark brown to yellow-brown. This helps to create better perspective and realism. Use the Zoom window to put any detail in your picture such as the branch shadows on your tree.

The airbrush work on the leaves will probably need touching up also, especially if you are drawing a large tree. In fact if the tree takes up the screen size it is better to use the stipple command instead of the airbrush for any leaves you need to create. To use the stipple command you will first need to make up some leaves, then from this use them as your stipple brush, x-raying them over your tree branches. Several stipple leave designs will be needed if you wish to obtain the best effect.

Bushes

All the above information on creating trees on the computer also applies to creating bushes. However, you may also find that you need more colours, as some bushes have flowers on them. If this is so and the picture you are drawing contains much more colour variation than just brown and green you will have to plan your palette even more carefully from the start of your picture.

If creating more than one bush make use of the enlarge/reduce functions; also cut out little bits pasting them elsewhere when more than one bush of the same variety is needed.

With most art packages it should be very easy to change the whole colour of a bush with a 'change colour' command. This will save you re-drawing a similar bush but which is of a different colour from your original one.

Flowers

These can be either out of doors or in. Out of doors flowers will tend to be smaller in relation to your picture area, and these are fairly easy to draw if this is the case, as far less detail will be needed for them. When most people draw indoor plants they are at a very large size and the tendency is to place them in a vase. This enables a more lifelike and interesting situation than just drawing the flower by itself with no background.

The advantage of drawing any indoor plants is that you can plan your colour palettes much better, needing fewer colours for any possible distractions from your reference such as sky or rivers, etc. This means that you will have more colours available for you to concentrate on your picture in question, especially significant if you are only using a 16-colour palette paint programme.

As always it is important to select a good integrated colour palette. This means that all your colours will then be as versatile as possible. It is a good idea to spend some time testing your colour palette selection and arranging them in order of contrast. By so doing you will save on valuable time should you later need a batch of colours to use in a multi-coloured airbrush tool or any tool of a similar colour cycling nature.

Dithering techniques could be used on the leaves of some plants. This can be created with the use of a cross-hatch fill pattern. But if you do use this type of fill pattern be sure to touch it up by re-colouring selected parts of the pattern to break it up, otherwise you may find that the effect only serves to coarsen your picture. For petals I would advise missing out any such effects as dithering or airbrushing; here all your petal colour shades need to be of a similar contrast level to gain maximum visual resolution. The effect will not only be smooth but also very pleasing to the eye, especially if you can get some darker shades drawn near the centre of an opened up flower, or base of a flower in bud.

The main reason for using such colours of a similar contrast level for petals is that they tend to be delicately shaded and if containing any lines at all in their make up these are of a very fine detail.

If you are a beginner at ST art it would be a good idea to start with such a still life as a flower or flowers in a vase - it can be very calming and makes a change from using photos or picture reference.

TOOLS – Stipple

The stipple tool is very similar to the airbrush in its method of application, and most ST art packages which have this feature share the speed and spray covering area settings with the airbrush function.

The fundamental difference between these two tools is that while the airbrush is restricted to spraying in a dot formation the stipple tool is not.

Stipple can use a 'brush' as its medium instead of just a dot. This means that a greater variation of patterns are available with the use of the stipple tool than that of the airbrush. A brush can normally be anything you grab from the screen to use as a drawing tool. Some art packages restrict the size of this and so sometimes you may find yourself using more than one art package to obtain your final desired results.

As the stipple works in brush mode this means its effects can be far reaching. The brush can most commonly be used in x-ray mode with the stipple command, but also with block and any other commands (such as inverse) available in the art package you are using. Its main use is for generating a random pattern of the brush you are using.

Possible ideas for such stipple brushes are grass, bushes, gravel, stone formations, star fields. There are of course many more combinations of these ideas - the above are just some which I can recommend, having used them myself.

A major point to bear in mind when using stipple is that generally a slower speed will be needed when using it as opposed to the airbrush speed. This is because your brush block being used in stipple mode will tend to be much larger than the one-dot size used by the airbrush. A slower speed for larger brushes will also mean better control when spraying any area; similarly, for a smaller block area a faster speed can be used.

As the spray pattern by both airbrush and stipple tools is random, care must be taken if spraying close to another area of your picture you might not want sprayed over.

In such a case use a copy of your picture on another screen. That way, when you have finished you can cut out your pattern and place it over your master image as you want it. Always make a copy before experimenting with such tools, because as quickly as you can create a good pattern you could also create a bad one.

LAST WORDS

"People love to be nice, but you must give them the chance"

Pierre-Auguste Renoir

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DRAWING OUTLINE FONTS

2. Measurements and Proportions

Graham McMaster

Looking at typefaces drawn by others is an important preparation for designing your own, but so much more information can be gained by rolling up your sleeves and making a few measurements.

The EM Square

If fonts drawn by different designers are loaded into an outline font editor, similar characters will probably appear quite different in size. However, if the same fonts are loaded into Calamus, for example, and printed at 12 point, they should all appear with the same height (Fig 1). For the newcomer to vector fonts this is one of the more confusing aspects and it is compounded by a complete absence of absolute, real-world sizes within the editor.

Bit-mapped editors appear more informative. Usually the smallest selectable element in the editor grid is related to resolution. For example, in the Signum 24-pin editor (resolution 360 dpi) the smallest elements represent 1/360 x 1/360 inch and there is a highlighted area representing 1/10 x 1/10 inch.

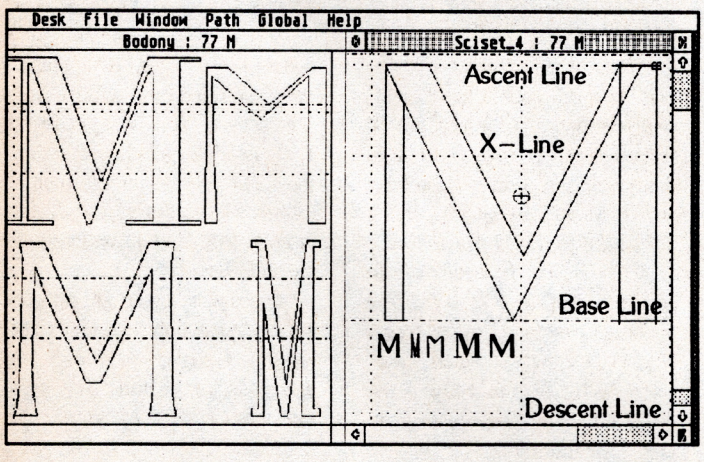
The work area for vector fonts usually consists of a large (invisible) co-ordinate array, the upper left corner of which is (0, 0) and the lower right corner is (16384, 16384). If a vertical stroke is drawn 1000 editor points thick, what will be its real-world width when printed at 12 point; or, more cogent, will it print with normal weight or bold weight? Neither editor provides an answer to the latter form of the question, although in a bit-mapped editor the absolute width would be known. [However, recall from the first article that the printing technology can dramatically alter that width.]

The answer to the question can be found by trial and error or by loading existing fonts and making measurements on them. What measurements to make and how to interpret them focuses attention on the em square (Fig 1). It traditionally encloses capital M which is often the widest character in a set and which in orthodox text fonts, has square proportions (i.e. its width is equal to its height).

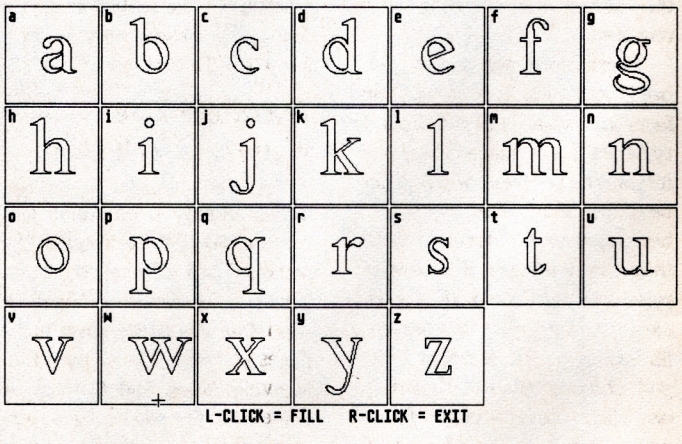
In font editors the em square is a set of user defined guide lines that specify some of the proportions of a typeface. All uppercase letters and numbers are drawn between the ascent line and the base line (the height of the em square) and all lowercase letters (without ascenders e.g. b, d or descenders e.g. p, q) are drawn between the x-line and the base line (the x-height). For a given typeface these quantities would normally be constant. The widths of characters are expressed as a fraction of the width of 'M' which, in turn, is the width of the em square. However the vertical guide lines that define the sides of the square are conveniently reset to the width of the character currently being drawn. Most font editors compute the amount of white space to the left and right of a character (i.e. its kerning) from the extreme edges of the work area rather than involving the em square.

Making Measurements

While the size of the em square is not important - that is the reason why different fonts appear different in size when



△ Fig 1: The printout of the M's was superimposed on this screen shot and is at 300dpi, 12-point.



△ Fig 2: The Calamus font file viewer on DMG.34 is very useful for studying letterforms.

	DMC Times 50	Cherry Times	CG Garamond	Cherry Baskerville	PD Manzanita	DMC Swiss 50	CG Univers	PD Middleton
w/h	0.974	1.007	1.074	0.947	0.324	0.977	1.057	0.780
x/h	0.680	0.668	0.631	0.668	0.80	0.718	0.712	0.783
Contrast	3:1	3.5:1	2.5:1	3.6:1	1.5:1	1.33:1	1.2:1	3.7:1
Weight	1.0	1.0	0.8	1.0	0.4	0.9	0.9	0.8
a/d	1.143	1.086	1.00	0.926	–	1.132	1.031	0.759

w = width of M, excluding serifs: h = height from base line to ascent line: x = height from base line to x–line: Weight = ratio of width of 'I' to width of Times 50 'I': a = ascender distance: d = descender distance.

CG Garamond

0.1M	0.2M	0.3M	0.4M	0.5M	0.6M	0.7M	0.8M	0.9M	1.0M	1.2M
I	j	t	J	E, h	B	K	A, Z	C	M	W
i			a	F, n	L	R	D, m	G	O	
l			f	S, p	P		H	X	Q	
			r	b, q	g		N	Y		
			s	c, u	k		T	w		
				d, z	o, x		U			
				e	v, y		V			

△ Table 1: Tables like this are very useful for revealing the proportions of a typeface.

viewed in a font editor - its proportions are important in characterizing a typeface and in comparing typefaces. Those proportions which are easily measured include the ratio of width to height of the em square (w/h), the ratio of x-height to em height (x/h) and the ratio of ascenders to descenders (a/d). Since these are ratios, no scaling is required when making comparisons between typefaces (Table 1). In addition, I measured contrast as the ratio of the thick to thin part of 'O' and to give some indication of weight, the width of 'I' was expressed as a fraction of DMC Times 'I'. In the latter case scaling was required.

These ratios are useful, global indicators for comparing fonts but what really defines a typeface is the shapes of its letterforms and their width relationships. Shapes can only really be appreciated visually and there are a number of atlases of typefaces but, since they contain copyright material, libraries may be reluctant to let you remove them. However, one I have borrowed and found very useful is 'A Manual of Comparative Typography: The PANOSE System'. In addition to displaying some 250 typefaces at large point sizes, it discusses a number of other parameters that can be used to classify fonts. A very useful Calamus font file viewer is to be found on DMG.34 (Fig 2).

Width ratios of letterforms are easily measured in a font editor. To obtain the second part of Table 1, I measured the widths of all the letterforms in Compugraphic's Garamond, expressed them as a proportion of 'M' and then rounded the numbers to one decimal place in order to cluster the characters. Similar displays are very useful for revealing the internal relationships of the letterforms in a font. [All measurements made for Table 1 excluded serifs.]

What Do The Numbers Tell Us?

It has already been stated that by tradition 'M' has square proportions and looking along the first row of Table 1, it can be seen that the well known typefaces of Times, Garamond, Baskerville, Swiss and Univers all adhere to (or were responsible for establishing) that tradition. A significantly over-square 'M' (w > h) usually signals an expanded font, while an under-square 'M' heralds a condensed face. The highly compressed 'M' in Fig 1 is from the P.D. font Manzanita (which consists of large and small caps) and the 'M' above it is from Middleton. While I would not recommend Manzanita as a practical typeface, it is a useful font to look at because it defines an extreme limit of compression at which legibility breaks down.

The normal range of x/h is generally taken to be 0.5 - 0.7. Its value affects the readability and colour (i.e. the overall appearance of a page) of a typeface. In general, sans serif faces have a higher value than serif faces. Contrast too is usually higher in a serif face but there are exceptions and I have included Middleton as an example. It is sans serif, has high contrast, a condensed 'M' and asymmetric ascenders and descenders, but it works and is a well drawn font.

It should not be necessary to measure the ratio of ascenders to descenders: in a 'proper' typeface they would be equal. However many of the early computer fonts had severely truncated descenders in order to squeeze more lines of text on to limited resolution screens and that 'patch' is often unwittingly copied.

Old style typefaces, of which Garamond is an example, were drawn to quite strict geometrical patterns based on the square, circle and triangle. Thus in addition to 'M' being square, 'O' was a full circle, 'S' was formed from two circles stacked on top of each other and 'E' was similarly formed from two squares. The width of 'O' was therefore the same as 'M' while that of 'E' and 'S' was exactly half the width of 'M'. Where appropriate these relationships also applied to lower case letters. A careful study of the data for Garamond reveals these and other patterns.

Some more modern faces show a trend towards uniformity in character widths, culminating in many typewriter faces in which all characters are the same width and are monospaced. More recently there has been a drift back towards traditional letterforms.

Specifying a set of proportions is probably the most important design decision that you will take but making that decision means that as you move from one character to the next, you are free to concentrate on drawing shapes.

Going On-Line

FidoNet Network Structure

Mark Baines

FidoNet is the largest private, amateur-run communications network in the world with around 18,000 computers or nodes worldwide and many hundreds of thousands of users. It is largely PC-based but software is available for most computers to run a Fido Bulletin Board System and many and varied conferences exist, especially technological and scientific. The ATARIST conference is of particular interest to readers. FidoNet was founded by Tom Jennings who used to program systems software for Apple. The first node was on a DEC Rainbow computer using Tom's own Fido BBS software. Several months later it had spread to 100 computers and a network of nodes started to be developed.

It soon became obvious that as different areas of the USA and the World joined the network that a structure had to be imposed to prevent messages continually circulating between nodes. If node 10, say, connected to node 11 and 12, and 11 connected to 12 and 15, it is obvious that node 12 would get the same messages twice - duplicates or "dupes" as they are known. With thousands of nodes this would get out of control, with the possibility of some messages never disappearing from the system and increasingly larger telephone bills.

Networks, Regions and Zones

As USA local calls are free and it was soon evident that nodes and users established local groups. This brought about small networks of computers where one node would be appointed the Network Co-ordinator or Host who would have the sole responsibility of gathering and passing on of messages. Nodes within any local network would only communicate with their Host, sending and receiving mail from him only. Networks became US States or Counties. In this way, mail could be passed from one local network to another without duplications.

It was only natural that from this low-end structure that a further hierarchical level be established - that of Regions. Regions are countries or US states and again, the same principal stands, that of having one co-ordinator responsible for that Region who communicates with his Hosts and they only with him, although he could have users of his own. Hosts would send and receive messages only from their Region Co-ordinator and not send them to other individual Hosts which would again lead to duplication.

Regions are once more grouped into Zones, the final level of the hierarchy. Zones are Continents and there are 6 of them.

Zone 1 .....USA
Zone 2 .....Europe
Zone 3 .....Australia
Zone 4 .....South America
Zone 5 .....Africa
Zone 6 .....Asia

The UK is Region 25 (Co-ordinator - Peter Burnett at Hastings) in Zone 2 (Co-ordinator - Ron Dwight in Finland) and consists of 13 networks:

Host 250 .....Northern Net
Host 251 .....Southern Net
Host 252 .....South Central Net
Host 253 .....Central Net
Host 254 .....London Net
Host 255 .....Southwest and Channel Islands Net
Host 256 .....Brit Net North (based at Tyneside)
Host 257 .....Net257 (scattered locations)
Host 258 .....North/South/East/West Net (based at Milton Keynes)
Host 259 .....Scottish Net
Host 440 .....Southeast Net
Host 441 .....Net441 (mostly Kent)
Host 444 .....Wilts and Oxon Geo Net

Most nodes fit within the geographical boundaries of these networks but it isn't obligatory.

Addresses

From the above structure it is evident that each node anywhere in the world can be given a unique number which consists of three elements - Zone, Region/Network and Node number. The Zone is always one number and the Region and Network numbers are usually combined to give three or four digits, so that Network 259 is the ninth network of Region 25. Of course, when you exceed ten networks, other numbers have to be found, as in Network 440 above. Node numbers can be up to five digits. The Network Host Node always take a node number of 0. This sequence of numbers is the node's address and takes this format:

Zone:Network/Node

so that STatic2 BBS, for instance, has the address 2:259/25 - the 25th Node within the ninth Network (xx9/) in the UK (25x/) and Europe (2:). This address format is known as a 3D address as it consists of three numbers.

In addition to Hosts, large networks can be divided up using certain nodes called Hubs. These act as sub-Hosts, their nodes connecting to them rather than the Network Host. In this way, a Network Host doesn't have to contend with too many nodes trying to connect every day to collect and send their mail. Some of them can do it through their Hub intermediary. The address format doesn't cater for Hubs. Sometimes, they take a distinctive node number, for instance, 300 where their nodes then take 301, 302 etc.

Point Systems

The 3D address can be extended to account for Point Systems. Points are essentially private nodes in the network that don't allow callers to log on to them, yet contribute substantially to the network with messages and files. These people are normal users who have outgrown off-line readers and use the same mailing and message editor software as proper nodes. I'll deal with Point Systems in greater detail in another article.

Point Systems are called such because of the way the address is changed to accommodate them. A node can have many Points each with their own number after the node number separated from it by a decimal point. Therefore my Point address for FidoNet mail is 2:259/25.10. This mail address is unique to me and signifies that I am a Point System at STatic2 BBS. Because this now incorporates four numbers, this is a 4D address and nodes take a Point Zero address when dealing with 4D addresses, making the STatic2 BBS node address also 2:259/25.0.

The full 4D address does not always have to be used when sending mail to another user, as the Zone number is always assumed and the Point number always 0 unless otherwise stated. However, with many nodes taking international mail it is best and easiest to get into the habit of using it.

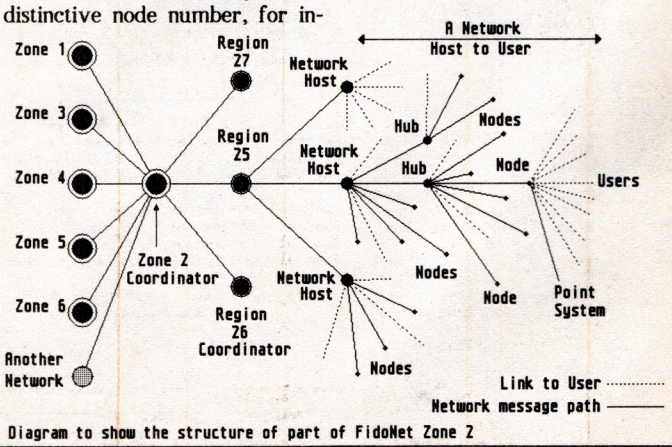


Diagram to show the structure of part of FidoNet Zone 2

UPDATE

Version 13.4 ~ July 1993

Applications

UTI.314: VIDEO MAESTRO demo. Well featured video titling package by the author of Video Master on disk BPR.20. Demo does everything that the full version does except save. (C:Not TOS2.06+)

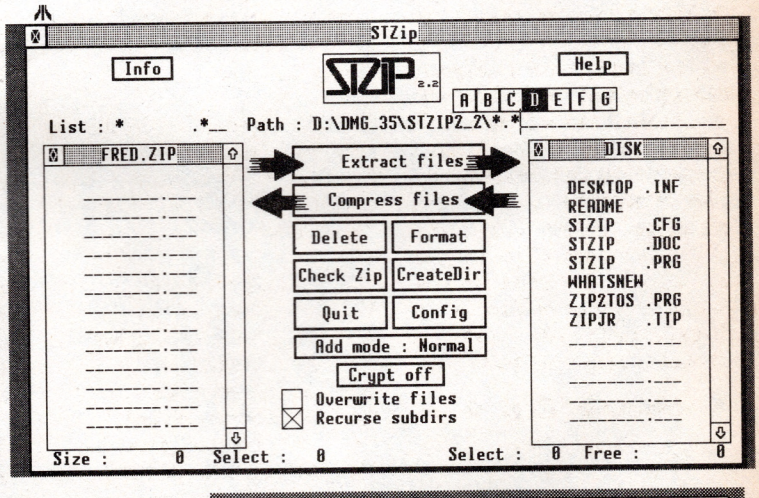
UTI.315: CONNECTIONS: Comprehensive Multimedia/Hypertext package that handles text, graphics, animations and sound samples. Examples included on this disk include a graphical database of missing children and a children's story with sound effects.

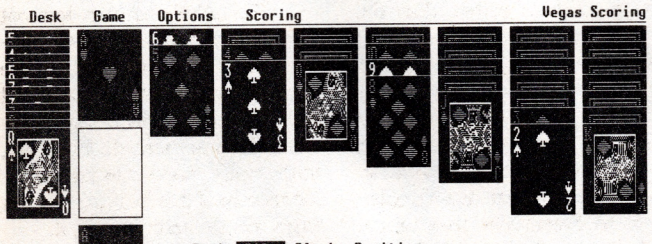
UTI.316: LABEL CAD: excellent label making utility. Wide range of art package facilities along with the ability to incorporate 'Sticker' logos on disk labels. Supports Epson and NEC compatible dot-matrix printers. German program but as it's almost entirely icon controlled this barely matters. (M:1Meg)

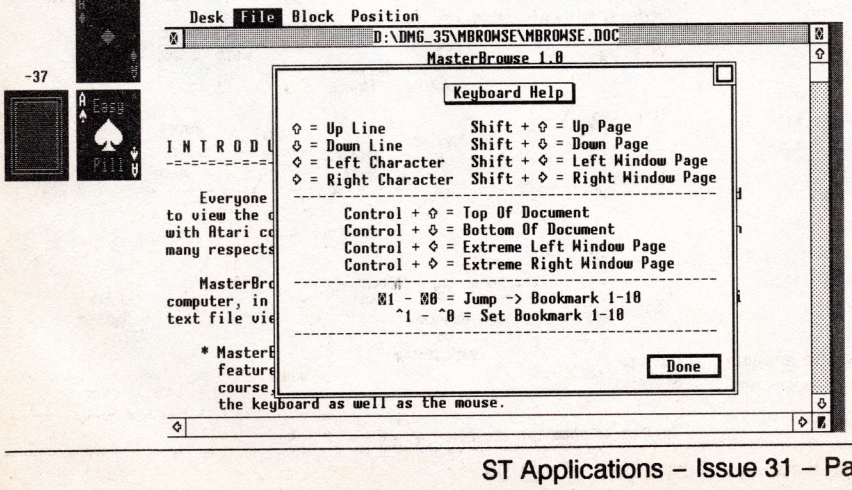
ST Club Disk Mags

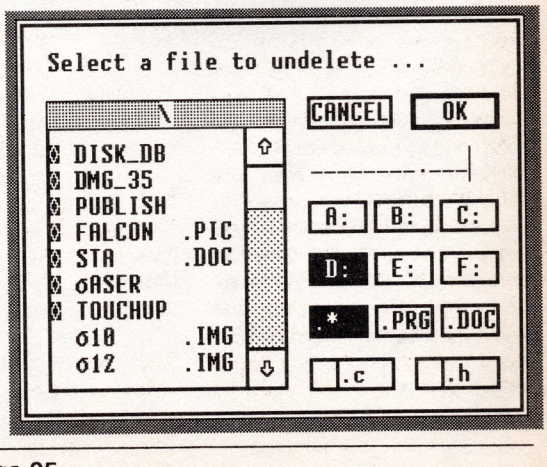
DMG.35: ST Club Disk Mag (June 93): 1WP2FAX - 1st Wordplus-to-Fax Converter. Converts 1st Word (Plus) documents into an IMG graphic that can be transmitted by fax software including ST-Fax, QFax, TeleOffice, or STraight Fax. 4-7-11 - 4-7-11 v.1.04 - patience games: Four - The four card game, also known as Russian patience, Seven - The seven card game, the one everyone knows, Eleven - You guessed it, the twelve card game, also known as 'Casting out Elevens'. FIVE TO FIVE v0.9 - converts sound samples to/from different formats: DVSM (Falcon), AVR (Atari), SND, AU (Sun, Mac, NeXT), WAV (PC), and raw data. ARTPRINT v1.2 - Clip Art printing program. Load and print clip art files on most 9-pin and 24-pin printers. Supports PI3, PC3, ART, DOO, IMG, TN3, and TNY format picture files. AUTORAIS - Makes the Desktop window under the mouse cursor the current window. DISK KIT - Desk Accessory that will Format Disks, Call up the File Selector, Rename Files, and Create Folders. DISKSPC v1.07 - graphically show on screen disk space used and still available. DJ+FW+ - allows First Word Plus to print graphics on Hewlett Packard DeskJet printers. Dynaram V1.01 - small program that displays, at the top left corner of your screen, the amount of free memory available. FATCACHE v1.0 - hard disk cache. FLICONV - Converts animation files saved from Autodesk Animator into Cyber Studio SEQ format files. GREETING v 1.03 - a small Auto folder program to display a short greeting message when you boot up your computer or do a reset (warm or cold). LISTINGS - Listings from ST Applications Programmers' Forum issue 30 (June 1993). MANADALA - pretty pattern generator (M). MASTER BROWSE v1.0 - well featured text file viewer. Mega Depack v2.12 - very comprehensive program de-packer that also supports LHARC, ARC, ZOO, PK ZIP, and IFF files. MonoPack 1.2 - Puts the New Core Mono Emulator onto the bootsector of disks. PA PACK - Packer for Programs and Desk Accessories. S7ADMAP - STe DMA AUTO PLAYER v1.0 - plays mono and stereo samples pre-sampled at 6.25, 12.5, 25, or 50KHz at boot up on the Atari STe/MEGA STE/TT line of computers through their built-in 8-bit DMA digital stereo interface. SlingshoT v1.02

DMG.35









- versatile program launcher. ST ZIP 2.2 - Latest version of the ST implementation of the ZIP file compression utility. ST Diary v1.0 - page-a-day diary. UNDELETE - file undelete program. WP2RTF - Converts First Word Plus documents to RTF (Rich Text File) format. XOMD - Enhanced Object Module Disassembler. ZNET9314 - Z*NET Atari Online Magazine Volume 8, Number 14, Issue #498, April 23 1993.

Calamus Fonts

FON.133: Calamus Fonts Updated Disk. The fonts Isabella, Helvetica Bold, and Univers originally on this disk have been removed as their distribution would have infringed copyright. In their place we have added the following new Calamus fonts: Gismonda; Handwrit; Hari_xb; Medus; Oregdry; Oregwet; Pala; Pepita; Bl_Devil; Choice10; Dejavodu; Goudsort; Troyer.

FON.143: Calamus Fonts: Genoaitl; Genoarom; Graphlg2; Hamburg; Harngton; Harquil; Heidelbg; Iglesia; Inkwell; Isadora; I Ching; Jacksonv; Jaksonvl; Kabel; Kabel Bld; Kabel Dem; Kabel Med; Kathlita; Lasrlond; Libbyscr; Loopdelo; Lowwests; Ltrgoth; Lumpasky.

FON.144: Calamus Fonts: Alison; Alxfract; Andrmed2; Animals; Archi; Balltegr; Barcode; Bernmod; Blackcha; Blckchan; Bodidly; Broadway; Bubble; Calligra; Canaith; Caveman2; Chalchan; Chasline; Chester; Chilipep.

FON.145: Calamus Fonts: Clasbold; Clasihvy; Clasital; Clasromn; Classrom; Classy; Courierb; Csdblock; Cuenifnt; Cunefont; Desert; Deusex2; Elegance; Eleganci; Elgarret; Elgarrtt; Facade D; Fantasy1; Fantasy2; Farsi01r; Flint2; Florence; Fraction; Franktim; Freehand; Futura; Futurblk; Futurbol.

FON.146: Calamus Fonts: Maidsscr; Manzanit; Medieval; Miamint2; Miamints; Modrnprt; Ms_Galli; Muriel; Newgaret; Nordic2; Rothman; Schzwald; Script It; Sharkth; Shock; Slabface; Slantinf; Starbrst; Stencilc; Symbol; Thomas; Tifrnumb.

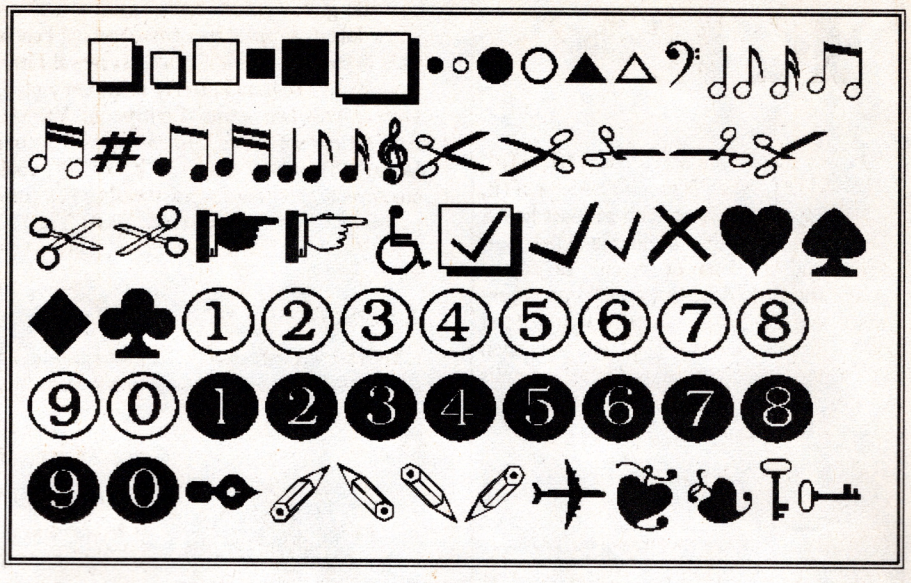
FON.147: Bullets fonts for Timeworks Publisher 2: This replacement for the Zapf Dingbats font supplied with Publisher 2 has been generated from the Hallbats Calamus font - it offers a vast improvement in the number of Dingbats available in Publisher. Font files are 80 x 40-dpi medium resolution screen fonts and 360-dpi printer fonts at: 7, 10, 12, 14, 20, 24, and 28-point. Also on this disk is the Hallbats Calamus font and a Publisher 2 document that lists out every character in a font along with its character number.

Games

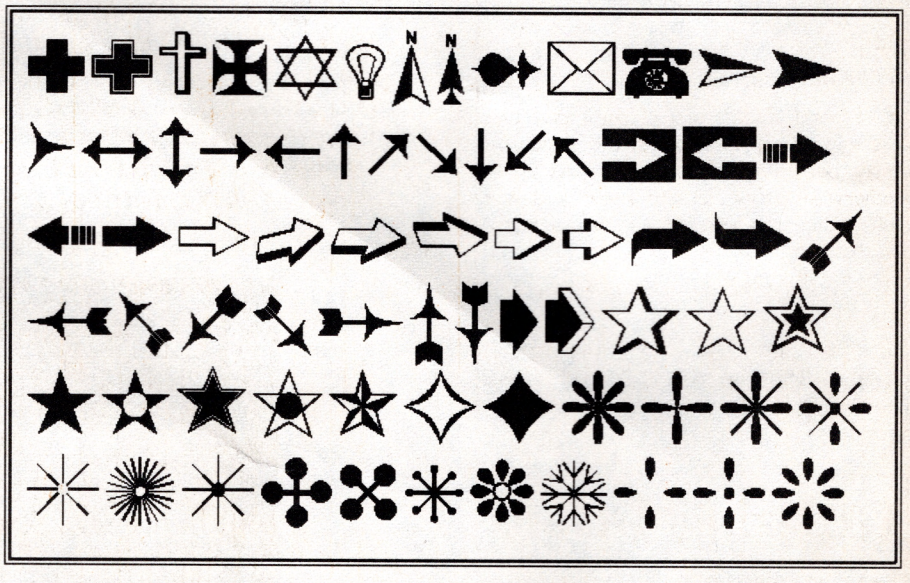
GAM.213: KUBES - Tetris variant with excellent sound and graphics. Addictive puzzleware Shareware from Digital Dimension (C)

GAM.214 and GAM.215: PSYCHO PIG 2 by Animalsoft: Well done adventure game with excellent graphics and four scenarios. (C)

GAM.216: ST Adventure Writing System: Create your own text adventures with graphics. Lots of documentation and three example adventures included on this disk. (C)



FON.147: Bullets fonts for Timeworks Publisher 2



GAM.217: SCRAMBLE: Puzzle game - unscramble the tiles to re-assemble the picture. Clues are given in the form of sound samples played as the tiles are moved around. Creator utility included so that you can create your own puzzles ($STOS:C:1Meg)

Graphics

GRA.176 to GRA.179: PERSISTENCE OF VISION: Huge raytracing package for ST and TT. These four disks contain the programs, source codes and full documentation - over 4MByte of data in ZIP files. ST ZIP v2.1 included. (C)

GRA.180: DKB TRACE: Another raytracing package - easier to use than the Persistence of Vision package. (C)

Information

INI.64: Inside Information Issue 64: FEATURES: ATARI WORKS - A brief overview of Atari Works; ATARI ART - Art on the Falcon030; CALAMUS - New Fonts for Calamus, FALCON - News about the Falcon030; GOOD STUFF: CYBER CUBE - True colour graphics card; DELPHI NEWS - What's new on the Delphi Network; FAIR DINKUM - Fair Dinkum upgrades; DT VIDEO - Desktop Video editing; GENI NEWS - What's on the Geni Network; HD HINTS - Parity or not to Parity; HD NEWS - Info on the 200meg Harddisks; KID STUFF - New Education software from Kidsoft; MIGRAPH - More info on Migraph hardware; MUSIC - Music on the Falcon030; OUTLINE - Outline Art for the Atari; ART - Info on Art for the Falcon030; THE FAX - Info on Straight Fax; SPECTRE - Rumors about Spectre GCR; SENTRY - Spelling Sentry upgrades; ZNET 9314 - Online Magazine.

MGN.81: ST NEWS Volume 8 Issue 1, the first 1993 issue, the seventh undead one and the 34th in total. Adventure solutions: "Déjà Vu II", "Chrono Quest II", "Fantasy World Dizzy", "Treasure Island", "Police Quest III" and "Mortville Manor"; a real-time article covering the New Year's visit of two Norwegian friends to my place, including the Quatermass experiment! News about the latest software, the latest viruses, and the latest attempts at the purification of the English language! An interview with Bernd Steidl,

KEY

All disks should run on an Atari ST, STM, STF, STFM, STE, Mega ST, Mega STE, TT, Stacy or ST Book with at least half a megabyte of RAM, a double-sided disk drive and a mono or colour display - unless the disk description advises otherwise. We no longer support single-sided disk formats. Disks have not yet been tested for Falcon030 compatibility - details on this will be reported in future Updates.

(M) - Runs in High Resolution Mono.

(C) - Runs in Medium or Low Resolution Colour.

(1Meg) - Needs one megabyte of RAM.

(Not TOS1.6) - Will not run under TOS 1.6 (STe) or TOS 1.4.

($) - source code included.

($C) - C language.

($ASM) Assembler.

Copyright: To the best of our knowledge everything on the disks in this catalogue may be freely distributed. If you know otherwise please let us know and the offending software will be immediately withdrawn.

This catalogue is originated and copyright the ST Club.

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Ordering Details

Please note that we do not accept orders by credit card. Orders accompanied with a cheque or postal order are dispatched by 1st Class post on the day we receive them.

All PD disks are copied onto high quality disks from known manufacturers. The price you pay us for PD disks covers only the costs of acquisition, duplication, cataloguing and distribution.

PD and Shareware Disk Prices

up to 6	£1.45 each
7 to 9	£1.25 each
10 to 24	£1.00 each
25 plus	£0.85 each

Licenceware disks cost £2.95 or £3.95.

All prices include VAT, packing and 1st Class post.

The Order Form for these disks is on Page 57

acoustic guitar talent extraordinaire and one of the latest shrapnel recording artists! Peaceville licenceware news - virusoft news! Literary bits! A great and utterly neat, very playable shareware game Centipede. Various interesting software (p)reviews: "Ventura Demo", "The Chaos Engine", "Xboot III", various screen accelerators put together in a comparative thing, "The Exorcist", "Sex", "The Falcon 030 Book", "No Second Prize" and a whole lot more!

Languages

LAN.142: C LISP: excellent implementation of Lisp for the ST. Lots of example code included.

Utilities

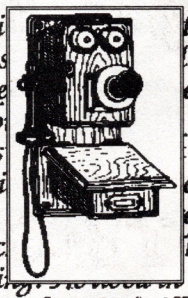
UTI.209: IdeaList v3.3: Updated Disk. Excellent utility for versatile printing out of 1st Word and text files. Supports multiple columns, double sided pages and multiple fonts. Includes support for 9-pin and 24-pin dot matrix printers, Canon inkjets, the HP DeskJet family, HP LaserJet with supplied softfonts, and Atari SLM laser printers.

Peaceville Licenceware

£1.95 each

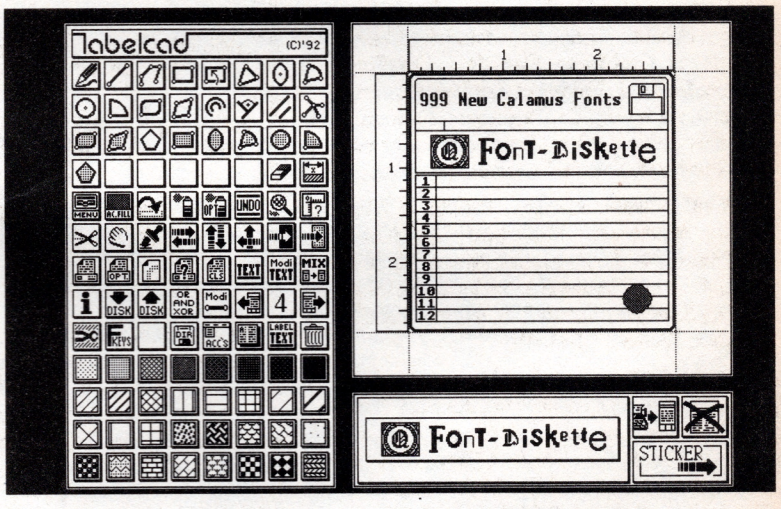
LCW.13: Sonic Violence by Catalepsy demo by Baz Norton (C)

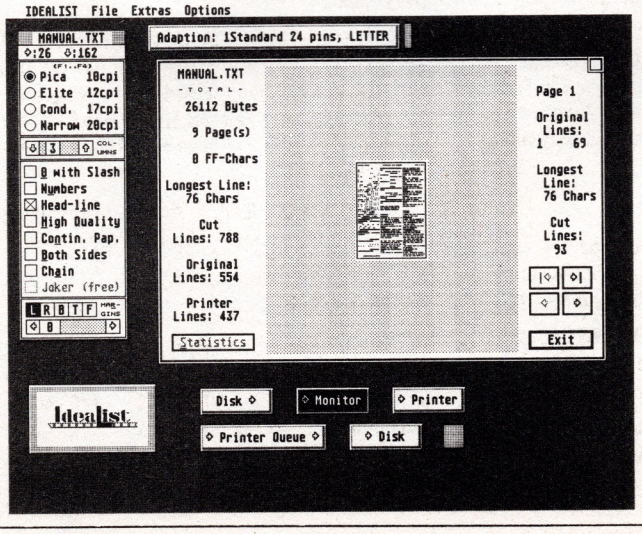
Let's Phone the Zoo



This i t a little girl. She lived in a beautiful hous lay she decided to phone the zoo. A monke e phone. The little girl said "what do yo about" but the monkey could not unders on the line was a bird. The little girl said "hi ould not understand either. She spoke to a ee bears and a hippo before finally reac he owl explained that he was just visiti a windmill and he needed a holiday because the windmill made him quite dizzy. The little girl told the owl "I would like to be your friend". The owl agreed and came to live in the little girl's house.

The End.





Top: UTI.315

Centre: UTI.316

Left: UTI.209

STICKS AND STONES

In this penultimate instalment of his monthly column, Günter Minnerup defends a broader vision of the computer revolution against the advancing corporate juggernauts.

Being a columnist has certain drawbacks. One of these is the tyranny of deadlines which demand to be met every month, another the difficulty of finding a suitable topic to rant on about. Put the two together and you have the problem of sucking your pencil while trying to come up with yet another angle on the Atari computing scene by next morning - a phenomenon well known to the professionals as writer's block. But there are also compensations to make it all worthwhile: the freedom to write about whatever one wants (within reason, as defined by good sense, the libel laws and the magazine's general nature) and the occasional feedback received.

There are few more effective boosts to an ego than to be told by someone that your column is always the first thing read when opening a new issue. Such boosts may be quite unnecessary for anyone conceited and opinionated enough to agree to take on a regular column in the first place, but they are still nice. On the other hand, no bouquets without the odd brickbat as they say, and the most recurrent criticism of STicks and STones expressed over the last two and a half years has been of its occasional tendency to peer beyond the narrow world of the Fuji cult and take up themes not directly and immediately related to the Atari scene: my observations about general business ethics, the under-representation of women in computing, on-line pornography, environmental concerns and similar matters. What's this to do with the ST, and what is it doing in ST Applications, I was asked.

Well I cannot speak for ST Applications as I have no idea of what the editor thought of these outbursts (except that they passed his desk unscathed) but I remain unrepentant. Like it or not, we are not hacking away at out grey plastic keyboards in a vacuum, unaffected by anything around us. Some teenage games players may make it into the headlines as self-absorbed, autistic computer zombies, but the serious and professional ST users I have met are not at all like that. They realise that issues such as cynical business practices, sexism, health hazards and education matter.

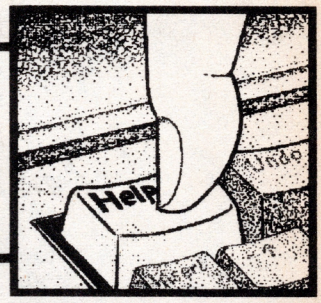
But this is just the pragmatic justification for what might be loosely termed "socially-concerned computer journalism". For me, personally, there is also a much more fundamental reason for refusing to treat computer affairs in isolation, and that is to do with my strongly held convictions on what technology is - or rather, should be - about. The net effect of all technological innovation is increased productivity: it enables people to produce more in the same time. So why not turn this round and let them produce as much as before in less time? Mindless drudgery in the service of ever-increasing output is not, in my view, the hallmark of a civilised society, especially when increasing numbers have no socially useful work at all to do anymore while others continue to work as much as ever. Less time at work for all, by contrast, means more time for leisure, art and education.

This potentially liberating effect of technological progress applies even more to information technology since its benefits are not only quantitative but also qualitative. Computers are not only labour-saving devices but at the same time creative tools - today's microcomputers enable ordinary people to tackle projects which not so long ago would have required an array of totally unaffordable and unworkable machinery and specialist skills. As a result, far more people can participate in spheres of creative activity which have previously been preserved for a moneyed elite. Most significantly in the long run, perhaps, linking up computers in networks and via the telephone system opens up enormous possibilities for enhancing access to information, communication and decision-making - surely it is not too far-fetched to envisage a future where important decisions such as, for example, the ratification of the Maastricht Treaty are made in a way that fully exploits the potential of this technology, by making all relevant data available to everyone, enabling everyone to take part in the debate, and enabling members of parliament to consult their constituents? Come to think of it, the day may not be so far off when Members of Parliament themselves join the ranks of those whose jobs have been rendered redundant by the computer revolution...

Recognising the enormous potential of computers for reducing manual, repetitive and time-consuming labour, opening up fields of creativity for everyone, and enhancing access to information and decision-making, I have been very sensitive to any signs of this potential being dissipated or even perverted by the social environment in which these machines are produced, promoted, marketed and used. The domination of the PC market by IBM, for instance, has had a deeply pernicious influence on the way the technology has developed, by obstructing and even actively preventing, the early emergence of affordable and truly user-friendly computing for the masses. Whatever else one may think of the antics and shortcomings of the likes of Amstrad, Commodore and Atari, such machines as the PCW, the Amiga and the ST have done more to further this cause than anything from IBM and Apple, the so-called "market leaders". There must be something fundamentally wrong with a market which these two are leading, a market in which big corporations can effectively block progress for the benefit of their corporate balance-sheet. Just consider: if it hadn't been for Big Blue's determination to lock everyone into their anachronistic Intel chip-based hardware architecture and the oh-so-trendy Apple's zealous guarding of their own patch, cheap standard machines, based on Motorola chips and a Finder-like graphic user interface could have been with us for many years now, used by millions as confidently and routinely as they use tape recorders and toasters. The benefactors of this market have been the likes of Microsoft's Bill Gates and not the ordinary users, let alone "progress".

Corporate monolithism is gradually squeezing out the spirit of innovation from the computer scene, just as governments become increasingly keen to clamp down on the anarchic freedom of communication offered by independent networks and bulletin boards. Isn't something going wrong here, and shouldn't it concern us all? But rest assured, this will be the last STicks and STones to venture into uncharted territory on the outer fringes of computer journalism: after two and a half years, I feel that I have said about as much as I have to say about it all, and decided to retire gracefully. Can you hear the sighs of relief in the corridors of corporate power throughout the computer world? Not in Sunnyvale and Slough yet, I hope, because for my parting shot next month I shall look back at eight years of involvement in the weird and wonderful world of Atari computing...

FORUM



Amoeba Slander

S J Pitts - Forum STA 29
John Phillips - Forum STA 30
David J Fright - Forum STA 30
Piper - Forum STA 30

I I have now received 2 issues of your magazine under my subscription. It is an excellent read. Of course there are many views to any subject, but the High Street mags suffer from too much concentration on games and demos. Fortunately, ST Review has not ceased publication after all, and in my opinion is the best of the crop of comics. I note that there have been letters of complaint about a certain light heartedness in some of your articles. Surely we are meant to enjoy our hobby, not suffer from it? As someone with an evil sense of humour, I find articles with the odd jest in them a damn sight easier going than some of the potfaced tirades that many people insist on writing.

Paul L Cass

Pirated Software

Simon Green - Forum STA 30

I Simon Green raised the issue of original software pricing in issue 30, and no doubt by now you have had several replies full of cogent middle management executive hypertalk in mitigation for these pricing policies. Watch the PC market carefully, Simon: some 'informed' observers see a hard time coming for high software prices.

Microsoft are marketing heavily with low-cost upgrade offers at present. Are they doing so because of world recession, or because they realise that high pricing to "what the market will bear" - determined by market analysts (and other Golgafrinchans) - is not the way to go, or is it a tactical exercise in market penetration and infiltration at the expense of a few points on the balance sheet?

In the DTP market Quark Express gives you little change from £600. Pagemaker 5 does likewise. On the ST we have Calamity SL similarly positioned. I've run these packages and they are all extremely clever in their own way, but not perfect by any means. There are rumblings in America about a DTP package called PagePlus. One USA columnist writing for an English PC mag predicted a DTP price war. PagePlus is not Quark + Pagemaker + Calamity SL + more knobs and whistles all rolled into one. It is competitive with all three in features. The reason for its success is quite simply that it sells for $59.95!

I like my STE. I like the way that it loads everything into memory from a hard drive running at an access time that would make a PC user roar with laughter and make his/her PC doze off. I like running Write On legally for the price of a magazine. The PC free disks are also full of outdated versions of software; such a lot of it was rubbish to start with and had been "given" away with machines for some time. Lotus Sympathy... er, no Symphony... Sympathy was what you needed to run it.

I accept that the ST is going to die and that the Falcon might survive the Tramiels' inept marketing. I also accept that Intel-based PC's will very likely disappear when the Power or the Alpha and Windows NT kill them off. What I have never been able to accept is software companies' inability to grasp the nettle (until this PagePlus) and start selling software like the commodity it is rather than some precious work of art.

Now the Software Moguls are always whingeing about piracy... although Microsoft don't seem to make as much song and dance about it as their competitors do. The industry even bred its own rottweiller (FAST) to set about anyone found running their "masterpieces" without one of their ludicrously worded licences. (Read one sometime: they share the same contact with reality that Atari's marketing department has.) In the ST world we had a brief flurry of useful titles on the free disks until Christmas. Someone killed that... I note we are now back to "normal" with shareware ramdisks and fractal generators providing the content once more. With some exceptions, the PC world is trying to backtrack to similar "useful" utilities and away from full software suites. Advertising revenue threats are the only thing to force magazines to do anything and this must be the cause.

Meanwhile, perhaps PagePlus will show the way. The actual contents of an average software suite pack cost around £25 to produce. PagePlus need to sell 10 packs at its £60 to equal Quark, Pagemaker, or Calamity... but if they do, then that's ten more regular users and ten more people in the pressure group to persuade businesses to buy more.

Their margins might be shorter but it seems likely that their legal user base will be much...much bigger. People will pay £60 where they *couldn't* pay £600!

John L Masterman

● Page Plus is a great little package, but it is not going to take the place of Quark Express or Pagemaker. The most recent version of PagePlus does not support tabbing of text: it is suggested that you use N and M-spaces instead!

PC vs Atari

Wendy Durham - Forum STA 24
Alan Kennedy - Forum STA 24
Stephen Murgan - Forum STA 24
Gordon Carruthers - Forum STA 26

The Forum pages are a regular feature of ST Applications, enabling readers to exchange ideas and help each other out with problems. Whilst we attempt to briefly answer questions here, if you have additional information or ideas please do submit them for publication. What you consider to be trivial information can often be of condiderable use to other readers!

Please send your letters on disk if possible. Disks will be returned with a PD of the writer's choice. Longer submissions may appear as articles, in which case you will receive payment at our standard page-rate.

Key:

The following codes are used for each Forum entry:

J Pringle - Forum STA 20: Author who first raised the subject, and in which issue.

Q Question

A Answer

I General information or 'Input', advice, discussion, hints and tips, etc., with or without reference to previous Forum pieces.

● Editorial reply

Dave Ansell - Forum STA 30

I didn't think I had much to contribute to the debate about the relative merits of PC's and Ataris, and then I read Dave Ansell's amazing letter on the subject in the June Forum.

If all the instructions of a computer took the same number of clock cycles to execute and the instructions on every type of computer were basically similar, millions of instructions per second (MIPS) would be a meaningful way of measuring the performance of a processor. In reality every processor has slow instructions and fast instructions, and some computers do more work per instruction than others. So I think the lists of MIPS ratings provided by computer manufacturers have more to do with marketing then with the actual speed of their product.

If fact there is no reliable way of saying how fast a computer is in general; you can only measure how long it takes to do certain well specified tasks. Units of measurement include the whimsically named Whetstones, Linpacs (floating point), Dhrystones (integer and string handling), SPECmarks (an attempt at normalised MIPS), Ghraphstones (graphics) and Khornerstones (a weighted average of Whetstones, Dhrystones, Ghraphstones, disc transfer rates etc.).

What really matters is the user's perception of the computer's performance on the jobs that the computer is required to do. Here comparison is difficult because it is very rare for Ataris and IBM-compatibles to run the same programs.

However, one could say without too much fear of contradiction that it is difficult to buy a new IBM-compatible PC today that has no internal hard disc or is perceived to be slower on most tasks than an Atari ST. For well less than a thousand pounds you can buy a 486 PC that is at least as powerful in almost every department as a TT.

Mr Ansell says that the Intel processors are difficult to program. That may be so, but it has not prevented people from producing a range of software for PC's with the Intel architecture far greater than that for any other microprocessor-based system.

If I wanted to write a Windows application today, I would use Microsoft's Visual Basic or Visual C++. Of one thing you can be sure: there will never be tools like these for an Atari model.

I stick with Atari because I once had a love affair with the 68000 architecture and am unwilling to let go, although I now find the UNIX RISC computers I work with every day far sexier. My TT's 68030 has grown too fat with exotic addressing modes and other rarely used features and is sluggish as a result.

The Intel-based PC and the Motorola-based Macintosh range have now become mass-market machines because of their software. Whatever Mr Ansell's estimation of the true value of the Falcon's hardware, I don't think the Atari Falcon will ever break into that market, even at bargain-basement prices.

The real direction in which Atari is heading is evidenced by their attempt to revive the STFM range. They are looking backwards to try to recapture some of the modest success they had in the past. I wish them well.

Alwyn Thomas

The recent debate regarding the ST's actual and the Falcon's probable performance against modern PCs seems to be focusing solely on hardware issues. I am as interested as anyone in learning about micro-architecture, buses and similar chip-level magic from informed Forum contributors like Dave Ansell. However, I have been in the lucky position over the last couple of months of (temporarily) having a 25MHz 486 sitting alongside my 1040 STFM. I have to report that, at user level, the quality and functionality of modern Windows applications just blows the ST into little pieces - fat Windows elephant perching on DOS traffic cone running on messy architecture notwithstanding.

I have been developing a bespoke Windows database with custom menus, pushbuttons, radiobuttons, forms and reports. I progressed from opening the shrink-wrap of Paradox for Windows to finishing the application inside two months. (Basically, you place buttons or other pre-written object tools such as text or graphs onto a form, then link them to user data with relatively trivial code.) The ease with which a tyro like me can do this is a tribute to the power of the built-in facilities, the object-oriented and easy-to-learn programming language, the superb documentation and, of course, the skill and design expertise of the Borland authors. My wife has a custom database for work and I've had a fascinating couple of months. The point is that I cannot foresee anything as remotely sophisticated and powerful as Paradox being developed for the Falcon, let alone the ST. The same is true for WP packages - check out Word for Windows: it combines and exceeds the best points of all the ST WPs. As for DTP, the recent arrival of Windows versions of QuarkXPress, PageMaker and Photoshop is going to hit the sales of Macs, never mind Ataris. The same is true of spreadsheets - get hold of an Excel or Quattro Pro spec: you'll never want to use an Atari spreadsheet again.

Make no mistake - modern Windows programmes let you do what you need to do in less time and effort and with more facilities than anything I have used or read about on the Atari scene. Yes, I know they take up loads of disk space and RAM, plus most now require at least a 25 Mhz 486 to run at a reasonable speed; but this type of platform is now available with SVGA for under £1000. This is not much more than the minimum usable Falcon (4Mb RAM and a measly 65Mb hard disk). The point is that all Windows applications can talk to each other (via clipboard, OLE and DDE) and you can output them to anything, anywhere. Windows is not perfect; it falls over now and again - but it is affordable and powerful just like the ST used to be. What really separates Windows from GEM (or MultiTOS) is that Windows has the full support of the movers and shakers of the computer world - the international software houses.

In spite of all that, I would still like to stay in the Atari camp if I ever manage to upgrade. I have invested a lot of time and money in the ST and would miss the whole scene - this magazine in particular. But unless Atari help develop Falcon software to rival the latest Windows products across the range, not just in the art and music fields, I shall be off. I am all for being different from the common PC herd - I just don't want to end up struggling with a platform that is kept going only by the efforts of the Compos and Systems Solutions of this world. If it hadn't been for such companies, I would have jacked in the ST already. Sadly, I rather suspect that Atari are just a bunch of barrow boys who want to pile 'em high and flog'em cheap. If so, I have little hope that serious large-scale applications development will take off on the Falcon. The TT fiasco speaks volumes; it put the final nail in the coffin of Atari's chances of entering the mass business market. I'd love Atari to prove me wrong with the Falcon. Otherwise, once I have saved a few pennies, I'll be buying a PC and never looking back - inefficient chip design or otherwise.

Bob Osola

As far as I am concerned, the Falcon'030 is the most exciting new machine since NeXT (RIP) launched their original machine in late 1988. For such a (relatively) cheap machine to come with 16-bit audio and a DSP built in is remarkable. (For instance it is possible to buy a DSP board for the Mac to speed up Adobe Photoshop. However, the cost is around £750, and even then one still only has the standard 8-bit audio of the Mac.) On top of that the machine comes with an unrivalled number of ports. So, why have I still not bought a Falcon?

Well - to put it simply: lack of internal expansion space. The PC market has now learned that machines without expansion do not sell. (IBM, Amstrad, Olivetti have all tried selling such a machine and failed.) Surely Atari (not to mention Apple and Acorn, etc.) must realise that people want good expansion capabilities in their machines and do not want to pay heavy premium for the privilege: a Falcon in a housing with a detachable keyboard with space for two 3.5" hard disks and a 5.25" slot for a CD-ROM, Syquest, or MO drive and a power supply to cope (and, with luck, a return to SIMM's!).

Atari should also upgrade the Falcon's CPU to 25 or 32Mhz; judging from the PC-market, the extra cost to Atari would only be around $20-$40. As regards monitors: Piper is constantly complaining about Atari using the old ST colour monitor. Well, as far as I can tell there is a reason for this: firstly, VGA monitors are not capable of understanding Overscan (although most have controls to adjust the screen's border without changing the resolution). Secondly, a resolution like 768x480 in 65535 colours takes up 720K. At 50/60Hz the video-chip has to access over 40Mb per second while the same screen interlaced only requires a bandwidth of 20Mb. Since other components also need to access the system bus, I imagine that on a Falcon running 640x480 in 65535 colours at 72hz on a VGA monitor the CPU would constantly have to be made to wait

while the video-chip got on with its job.

With all the new feature of the Falcon and MultiTOS, Atari must make an effort to get developers to use standard file formats (.IMG, .GEM, Speedo Fonts etc.). Also, MultiTOS supports very extensive inter-process communication. Atari really should lay down some detailed guidelines on how best to use these features. Falcon - Predator or Prey? I was disappointed to read that Atari are not developing their own PC emulators. Although third-party developers will certainly develop PC emulators (indeed Hans Sack has already finished the 286-based FalconSpeed with support for SVGA and Windows 3.1), I am worried that any such emulator would probably be too expensive. The point is that at this time one can buy a complete 33Mhz 386sx PC motherboard for less than £100 including VAT (a 25Mhz 486sx board costs around £200) yet Vortex charge £280 for a 16Mhz 386sx emulator. If Atari were to market a 16Mhz 386sx emulator built into the Falcon with DOS for an extra £100 or so they would sell the Falcon in great numbers to people who might otherwise buy a PC.

K S Grings

Falcon Feedback

Piper - ECTS Report STA 23
John Watkins - Forum STA 24
Britt Johnstone - Forum STA 24
Alistair Bodin - Forum STA 25
John Watkins - Forum STA 25
Phil Hodgkins - Forum STA 30
Alan Chin - Forum STA 30

I I have an acquaintance who has the annoying habit of wanting every new techie release right now, and is rich enough to afford the habit. Having had a Falcon for over two months, he has fitted a third-party memory upgrade board, originally designed for the TT, into the bird, enabling him to fit 12MB of SIMM memory with a few minor modifications. He expects to put the board on the market in the next six months, for well under £50. With the price of SIMMS far lower per meg than what Atari are quoting for their fixed-memory boards, he could be on to a nice little earner.

He's also managed to get some imcompatible games working on the Falcon. Seems that on the ST, there was a bit of unused space in the old 3-channel soundchip, which speeded up the sound subroutines a little if used. This space isn't on the Falcon, which is why so many ST games go "Urk!" and fall over. However, remove these calls and Presto! you have a working game. Admittedly, most of them don't have any sound, and some are almost impossibly fast, but if one person in his attic can do this, the games companies surely can.

The Falcon's future is assured - provided the machine actually makes it into the shops. I know of one shop in the area that had ten, and they all went in under a fortnight. The demand's there; where's the supply? Over to Atari...

Harry Payne

I To add to the Falcon debate, I would like to say I will almost certainly be getting one but not until the "consumer" case is here (I dare not contemplate what that might look like!), and also give the machine's 'spec' time to settle down - 32MHz speed would be nice.

It's a shame that the "cheap" IDE hard drive interface turns out to be internal 2.5 inch technology. This is anything but cheap. I wonder if the IDE drive could be fitted externally to enable the use of 3.5 inch drives? Another pain is the lack of support for an external 3.5 inch floppy. I consider the external floppy drive I purchased for my STE to be one of my most useful purchases, even though I already had a hard drive. Maybe Atari will rectify some of these drawbacks (cough) and give us a sensible memory upgrade path as well. We'll probably have to rely on Marpet Developments to come up with the solution to that one as usual.

Despite the moans, I am really excited about the Falcon. As a professional user of the PC, the Falcon looks to me like an ice lolly to a man dying of thirst in the desert.

A quick comment on the *ST Applications* before I finish. Its great! The only changes I'd like would be more of everything and more often. A weekly edition with about double the articles would be just brilliant!

Peter Robbins

A View of Atari

Jon Marshall - Forum STA 30

I PCW did have a review (really a preview) of the Falcon in their November '92 issue.

John Watkins
CIX #495

● Much respected US magazine Byte did a very enthusiastic hands-on preview of the Falcon some months ago. It probably kindled a fair bit of interest in the machine; at the last count there were 150 Falcons in the US.

PC Keyboards

David J Fright - Forum STA 30

A David Fright will be pleased to know that there is a relatively inexpensive solution to fitting a PC keyboard to the ST. It's a piece of hardware that is simple to fit and lets you use the PC and ST keyboards at the same time, as well as the mouse. The PC keyboard is joined to the ST via an extension cable supplied. I have been operating with this modification for at least two years and never had a problem with any ST software or with Spectre. And the bonus, of course, is the flexibility and the superior keyboard. What I don't know is whether it will work with a duff ST board and mouse.

The hardware is called Z-Keys which I purchased from a UK supplier whose name unfortunately I cannot recall or trace in my files. However, the product is made in the US, where the maker or distributor is: Zubair Interfaces Inc, 5243 B Paramount Blvd., Lakewood, CA 90712.

I paid £55 for the kit. What you get for your money is an interface board, a connecting cable, an IBM extender cable, a set up disk, fitting instructions and registration card. You only have to run the provided software once to make sure the PC keyboard is responding properly. If it does, as mine did first time, then the disk can be put away and should not be needed again. The two keyboards and the mouse are available as soon as the computer is switched on.

Points to note...

1. Z Keys will work with either a XT or AT keyboard that is set to XT mode.
2. ATCompatible keyboards must have a slide switch on the bottom.
3. Not all keys on new keyboard work. In particular: F11, F12, Page up/down, Home and End, and the numeric pad will not produce figures.

Reg Chiswell

● It was probably Third Coast Technologies that supplied you with the Zubair interface. Thankfully, this lot are no longer in business.

Publisher 2 Fonts

I Timeworks Publisher 2 discs contain a set of italic serif fonts which are not extracted in the normal installation. In order to extract them from the font archives the following steps must be followed:

* Copy INSTALL.APP & INSTALL.RSC from disc one onto a new disc.
* Copy XXX_FONT.CAF and YYY_FONT.CAF onto the same disc. XXX is either CGA (medium rez) or VGA (high rez). YYY is the extender of your font files (eg. B30, B36, EPS etc).
* Make an ASCII file called INSTALL.TXT using the following example for a DeskJet 500 at 300dpi and a medium resolution screen.

```
[[Extracting italic fonts for HPDJ][OK]
oc b30_font.caf
de j:\
ex 16398 7
ex 16398 10
ex 16398 12
ex 16398 14
ex 16398 20
cc
ca srf007it.b30
ca srf010it.b30
ca srf012it.b30
ca srf014it.b30
ca srf020it.b30
[[Extracting italic fonts for screen][OK]
oc cga_font.caf
de j:\
ex 16398 7
ex 16398 10
ex 16398 12
ex 16398 14
ex 16398 20
cc
ca srf007it.cga
```

ca srf010it.cga
ca srf012it.cga
ca srf014it.cga
ca srf020it.cga

All that needs changing are the file name (oc FILENAME) and the path for the resulting italic fonts (de PATH).

Then run INSTALL.APP. It doesn't matter what selections you make. Choose any printer and any drive, the INSTALL.TXT is drive and printer specific. Now you have a set of italic serif fonts. Timeworks cannot use the fonts as they are, though. They need to be given a new ID number - I used 15. In future releases the software should automatically select these when italic is selected whilst using Serif, but currently (v2.01) this is not supported. By running FONTWID.PRG, you should now have Serif italic available as a new font set. If you wish to change the order fonts appear in their selection box, you will need to change the order they are on the disc in the same way as re-ordering an AUTO file.

Cameron Marshall

Squashed Drives

Q Do you know of a data compression utility for use with ST hard drives? These are becoming common on other platforms, and would be of great advantage on the ST for DTP work.

Double Click were said to be producing Datadiet, but I understand they have gone out of business.

If there isn't a program currently available, is this something you could put your programmers onto? Your commercial offerings are always reliable and well priced to maximise sales.

Rob Warner

● Yes, Double Click have gone out of business and the level of dissatisfaction over Data Diet in the US probably accelerated their demise. The main problem with disk compression programs is that they must be 100% reliable under *all* conceivable circumstances. HiSoft have just launched DataLite2 which promises to be what you are looking for.

Matters would be a lot simpler if applications offered the option to save data files in a compressed format. Programs such as Fontkit Plus, Redacteur, and paint programs that support IMG format files already do this to good effect. This has the advantage that data integrity is ensured, the files can be transferred between applications in their compressed form, and the compression algorithms may be fine tuned to accommodate the data type produced by the application. There are a number of programs for compressing executable files on disk UTI.232.

Foreign Disks

Q I publish a monthly club newsletter using Calligrapher Professional on an Atari STFM with 2 disk drives. I frequently receive contributions from club members on disks from PC, Amiga and Acorn Computers but I have experienced difficulties in accessing their ASCII files. On the MS-DOS formatted disks in particular I can read the titles of the files but sometimes cannot open them. I would appreciate any advice on how to overcome these compatibilty problems.

G J Williams

● With a 5.25" drive, being able to read the disk directory but not the files is often the result of not having set the right seek speed for the drive. Other tricks to try include: duplicating the disk with something like FastCopy 3, or even sending your contributors a blank disk PC-compatible formatted on your machine and asking them to copy their files to it.

FDD Compatibility

K A Schimmel - Forum STA 30

A The disc drive from the Spectrum +D can be used on the ST. My external drive is on its second computer. See my Forum answer in issue 4 (BBC Drive). All one needs is a correct lead...

John Watkins
CIX #494

DSP Fundamentals

William Hern - STA 27
Chris Isbell - Forum STA 29
Dave Ansell - Forum STA 29

I Of course, the 56001/2 as used in the Falcon '030 is not the most powerful DSP that Motorola produce. At the moment their most powerful DSP is the 96002 (which at around $440 is very expensive). However since the price will eventually fall, it is possible that some future models of the Falcon will incorporate this chip. The problem I gather is that the 96002 is not entirely backwards-compatible with MC56001/2. It would be very helpful if someone could shed some light on what is and what is not compatible with the 96002. That way Falcon programmers would know what to look out for and avoid.

K S Grings

TX16W disks (MSX Disk Format)

Hallvaro Tangeraas - Forum STA 27
Paul Kenny - Forum STA 29
Nial Grimes - Forum STA 29

I MSX disks were formatted using MSX-DOS which was written by Microsoft and uses (suprise, suprise) the same basic scheme as MS-DOS. It is not as suggested in one of the letters CP/M format or 82 track. (Note - although Alex may like to deny this Hisoft (IMO) always tended to treat MSX disks, etc., as being CP/M in the internals of their programs since the two were quite similar and it was fairly trivial to convert from one to the other.)

The basic differences between MSX and MS-DOS v1 were that the boot sector executable code (if present) was in Z80 rather than 8080 and one or two other similar things.

However most early machines wrote single-sided disks which although formatted correctly according to all the specs are not read correctly under MS-DOS. This appears to be a fault of MS-DOS which identifies the media correctly and then procedes to try and read tracks off both sides of the disk anyway - this leads to corrupted directory and FAT reads.

Later machines use standard double-sided 720k disks and there should never be any problem reading those on a PC, nor on an Atari. For some reason (which I can never remember) **writing** a file (and especially a folder) to an MSX disk from an Atari can corrupt the disk. (This may be something to do with disk-changes; I figured it out once but it was years ago.)

So provided the sampler uses a normal format 720k MSX disk there should be no more problems than there would be in handling a PC disk.

Tony (GST department of Trivia)
CIX #487

A A problem with manipulating TX16W disks on a ST is that the TX allows spaces in file names.

Procopy duplicates whole disks OK. Other bit-copiers would seem to be worth a try - there's no deliberate copy-protection.

L Payne
CIX #488

I Hi Tony. I guess you must be the only other person in the UK that knows anything about MSX-DOS - we stopped doing MSX stuff before Alex joined us. Just about the only thing that we needed to change to get our CP/M stuff working under MSX-DOS was the console input on the editor to get the cursor to flash. We used an ST to duplicate MSX DOS products at one point. I remember writing a guide to converting stuff from CP/M to MSX DOS for Sony - ahh, those were the days...

Dave Nutkins
CIX #489

I It was fairly easy to change stuff, wasn't it? I remember the hardest job with converting various programs from the Superbrain was in getting the files across onto MSX disks in the first place.

I think the hardest program to change was Wordstar because it kept trying to use memory that was occasionally paged out.

I seem to remember one of your debuggers using the wrong interrupt for something (on MSX2) until we pointed it out to you :-)

I must admit testing the MSX2 BIOS for Philips was quite fun :-) After all, having one's

nearest boss in Eindhoven when one is in St Ives is quite pleasant indeed. And of course one had to check that common games worked correctly.

Somewhere I've still got the BIOS listings and full MSX-DOS source - must be worth all of 5p these days :-(

Tony CIX #491

Q A friend uses a Yamaha V50 synth, which has a floppy I assumed to be MSX-ish - however, when I bunged a disk in his ST it couldn't read it at all. What could explain this?

S CIX #490

A It's not an MSX format disk? I don't really know what format those things use. AFAIK some things use a 800k format which is more Mac or Amiga-like than MSDOS.

Tony CIX #492

ST Book

E C Barton - Forum STA 30

I I had the opportunity, a few months ago, to buy an ST Book at a "low" developers' price, which was already way above what I perceived the price should have been. It immediately became apparent that Atari had taken collective leave of their marbles during the development of the Book, to a greater degree than while they were coming up with the Stacy.

For those who don't know the Stacy (of which I have two), it's (it was, rather) a transportable (too awkward to be a laptop - see next paragraph) ST with backlit, super-twist LCD screen, built in floppy drive, built in hard disk, etc. So far so good, plus it's much easier to carry than the equivalent standard ST hardware, and quite easy to read once you get used to the 'submarining' of the mouse pointer in the LCD pixels.

Where it falls flat on its face is in its battery compartment: there isn't any. Or rather there is one, but that's where people keep their sandwiches, since the Stacy has never been provided with the promised batteries. This has always been a source of immense frustration, since it was one of the main reasons for buying a Stacy; I could have quite happily remained with standard ST's in the studio as I always use mains power there and on stage, and always have to use an extra monitor on stage with the Stacy as the lighting is too bright for its screen.

Clearly, the embarrassment at having a portable computer that can't be used on the road must have reached parts of Atari Corp that other fiascos in the past haven't - hence the Book. With delightful logic, they are able to claim an immensely long battery life as the screen is not backlit; what's the problem in providing a switchable backlight? Anyway, the Book is laughable proof that Atari's design department haven't got a clue what real life is all about.

I'm writing this on the very wonderful Macintosh PowerBook 170. I haven't given up on Atari - the ST's been very good to me over the years, and it's still in daily use at the studio. But I won't be getting a Falcon when I finally change from Notator SL to Notator Logic.

Will Mowat

Stitching Aid

Mrs Wilson - Forum STA 29

A The PD Warehouse, 175A Widmore Road, Bromley, Kent, BR1 3AH has a PD program "X-Stitch" by Chet Walters. Disk No. SWB6.

This month's magazine "New Stitches" has adverts for at least two different software packages for Cross Stitch design (for various computers including the ST) ranging in price from £16.99 to £34.99.

K M Louis

HP Service

Jane Firbank - Forum STA 26
John Wilkinson - Forum STA 28

I I was interested to see the letter on HP service in STA 28. Despite being familiar with HP DeskJets I haven't had too many problems with them.

However, I have had quite a lot of experience with other makes of Inkjet printers, especially Olivetti JP350 type printers. Variations of this machine are also sold by Citizen, Bull and Fujitsu.

This type of printer suffers badly from gunging up on the bars along which the print carriage moves. The solution? Clean bars very well and apply the mearest smidgen of oil. What's more this is exactly what genuine Olivetti engineers do.

The other part of this machine which dies is the paper bars. Much like the HP DeskJet ones, these fail to move back and forth after a time. The solution here is to spray a little WD40 behind them. Also check that the cams which operate them are engaging correctly as the levers can sometimes pop out of place, especially if the printer has been transported.

Roland Givan
CIX #482

FAX Modems

Bob Osola - Forum STA 26

I I have delayed in writing to respond to Bob Osola's letter because I expected to be only one of many to do so. Having seen no reply, as yet, I thought it time to put fingers to keyboard to clarify a couple of points.

I am a user, nothing more, and have no connection with Supra or NewTech, the publishers of STraight FAX™, but I use a Supra-FAXModem v32bis together with the latest version of STraight FAX (V1.07).

This combination is excellent in terms of performance and stability, albeit there are a couple of FAX machines out there which just don't want to talk to me, but that's not uncommon, anyway!

STraight FAX is supplied with drivers for PageStream, GDOS/ FSM-GDOS and Calamus (1.09 & S/SL) which allow you to create pages within these programs and print them to disk as FAX files for transmission. In addition, you can send .IMG, Degas, ASCII and .GEM files directly; the program performs the necessary conversions.

STraight FAX operates under GDOS (or variant) and from within the program you can print out FAX pages or convert them (as a whole or in part) to .IMG files for importation into a desktop publishing package, optical character recognition program or paint program for further manipulation.

The one current disadvantage of STraight FAX is that it must be run as a program and is not available as a desk accessory, as yet, meaning it ties up your ST when waiting to receive faxes. However, the latest version is Falcon/MultiTOS compatible and so should be fine on this beast!

It may not be ideal, but it is a very workable combination which I would recommend to any ST user contemplating a FAX machine, especially as it also provides you with a *very* fast modem, to boot!

Ian Braby

Rodent Repairs

I It occurs to me that many ST owners may be buying a new mouse when the old one can be fixed for a fraction of the cost of even the cheapest replacement. In my experience, it is usually the buttons that give up long before the positioning part of the mechanism. In the past I have adopted the miserly task of swapping the mouse button micro switches over when the left one goes dicky. This only cures the problem for a while longer, of course, as you just even out the wear and tear out a little.

On browsing through the Maplin Electronics catalogue recently, I discovered that they now sell switches suitable for the Atari and Squik mice (possibly others as well). The part numbers are KR93B @ 42p each and KR91Y at 36p each respectively. They are an exact match for the originals and make the mouse button action like new again.

The switches must be soldered to the main PCB after removing the old switch but the whole job can be done in 10 minutes or so by anyone who is reasonably handy with a screwdriver and soldering iron!

Graham Curtis

Ceefax ST

J Furness - Forum STA 30

A If J Furness, or anyone else, would like a copy of Ceefax ST then drop me a disk and an SAE. It runs in high-res and is a GEM driven affair but if I may allow myself to indulge in a rather large plug there is a cheaper, more col-

ourful alternative.

I got Ceefax ST from Sphinx Software PDL with the intention of using the software/interface to drive my existing BBC Morley Teletext Adaptor. However, as the software does not cater for electronic tuning it wouldn't work with it.

Undaunted I set about the task of figuring out the I2C serial bus used to address any teletext adaptor and altering the interface to use available components. The results of my labours were a low-res (colour) terminal program which also tuned, saved and loaded pages and implemented fast-links. I carried this further, writing a rather large STOS teletext extension allowing all this and more.

I am planning to release all the software Shareware, the extension and an updated clock-setting terminal through registration, and this is where I get to the point.

BBC versions of the Morley Teletext adaptors can now be picked up very cheaply second-hand. I recently saw one advertised for £20 in Acorn User - it would cost a lot more in time and money to make your own and it wouldn't have the advantage of being electronically tuned. If anyone would like a copy of my teletext software then send me a disk and I'll send you what will be the PD version. It should also work with any other adaptor, even those which are manually tuned, although I haven't been able test this yet.

Finally, I am having trouble with the compiler extension in its use of internal libraries. Can anyone can help?

Richard Hunt, 9 The Close, Roydon, Diss, Norfolk IP22 3RE

FontGDOS

Q I bought FontGDOS on disk GDOS E, but having followed the instructions given in issue 22 of ST Applications for installing it with Timeworks 2 I have had little success. After an apparently successful installation Timeworks 2 crashes when I run the Fontwid program.

Is there anywhere I can get help on this? I was interested in this program after reading that it can speed up printing of documents in Timeworks 2.

Paul L Cass

● FontGDOS is not compatible with Fontwid. Swap back to standard GDOS before running Fontwid. Re-boot with FontGDOS and then run Publisher. The WID files generated by Fontwid only need to be regenerated if you change the font files or Assign.Sys file.

MIDI File Format

Q I would welcome an article explaining the MIDI File format. In particular, the Header part (I've worked out how the notes and rests are represented) and 'Sub Headers' which appear to separate multiple parts. I have a Yamaha V50 Keyboard which has a built-in sequencer with quantising. I want to play this to the Mega ST and I need to write a program to create a resulting MIDI File which can then be interpreted by Music Publisher 2 to give a good start towards obtaining a printed copy.

P Waldock

PC Board Designer

Q Can anyone advise how I can get a HPDJ500 driver for my PC Board Designer? The company in the US, Abacus, don't answer my letters and the German originators don't even acknowledge the product is theirs!

Reg Williamson

Help on Qume

Q Does anyone have any information (operations manual, service manual, curcuit diagram even) for a Qume Laser Ten Plus Laser Printer? Any help gratefully received and suitably rewarded. Contact Peter Heaps on 0753-885403.

Peter Heaps

Big screens and accelerators

Q Has anyone any experience of using Titan Design's Reflex card on a 520STE? Is it possible to also fit in a 16Mhz accelerator (at the same time)?

Would it be more cost-effective to get a MEGA STE and fit a reflex card to that? Looking forward to acres of screen.

John Watkins
CIX #476

A Well, I'm very happy with my Reflex card but it's in the Mega ST expansion slot. I also have AdSpeed installed, but can't say for sure whether you can get the combination physically into other Atari models. Give David Encill a ring at Titan, he's always very helpful. Tel/Fax 021 414 1630, tell him we sent you :-)

Joe Connor
CIX #477

Size of Small Font

Q Following the theme of legal programming, what's a good way to find the size of the 'small' system font (as used in icons)? I know there are three available heights, from work_out[5], but where does it say what the three heights actually are?

The ob_height of an object using this font seems to be the same as that of the normal font. After that I was out of ideas.

Martyn Dryden

CIX #702

Not so Speedo

Q Could you advise if possible how far away Speedo GDOS is? If it is light years away is FSM GDOS available? Are you reviewing this product in the near future?

M Purdy

● Speedo GDOS supersedes the ill-fated Ultrascript-based FSM GDOS. The software part of Speedo GDOS is now finished and from what we have seen it is a very good product. Once the documentation, manuals and packaging have been sorted out Speedo will be available from Atari. When is another matter: it could appear before the re-cased Falcon030 or after the Falcon040. Your guess is probably as good as anyone else's. (Update: It seems that Speedo will be distributed in the UK by HiSoft and by Compo in Germany. Rewards for loyal developers?)

Blue Letters

Q How can I make Redacteur (or any other word processor) print out colour? (Text printed in red, say, instead of black.) I have a DJ 500C.

Apostolos Agrogiannis

● If a word processor prints in text mode and has user-editable printer drivers you should be able to persuade it to print colour in text mode. You could sacrifice some of the text styles: for example, in the printer driver you substitute for 'style light on and off' the codes for 'blue on and off'. Or you can use some of the foreign characters to turn colours on and off: say, alpha = switch blue on, beta = switch blue off, etc. You will not get a WYSIWYG display, but with a word processor such as First Word you could employ Fontswitch (£14.95 from the ST Club) to give different type styles for different colours.

There are no word processors we know of that print text in colour in graphics mode. But with the Falcon supporting high resolution colour displays, and the rapid drop in prices of good quality colour printers, it should not be long before some products of this type start to appear.

Spare SIMMS

Q Has anyone any bright ideas for using up 256KB simms, apart from trying to sell them to one of the three people left with a 520 STE? Could you construct a printer buffer with them, or make a ramdisk to go into the DMA port?

Alan Kennedy

Wish Lists

I This time one for Lattice C 5.5. I bought this wonderful program a month ago, and the

documentation is huge and very very well done. Here are some suggestions for improving the package:

* Help on-line (hypertext-style, as in Pure C);
* C++ upgrade;
* Full source level debugger;
* Speedo GDOS library and documentation;
* MultiTOS/MiNT library with full documentation (eventually with a tutorial about multitasking);
* An updated version of WERCS supporting all new features of TOS 4.0 (Popup, hierarchical, scrolling menus, etc.).
* DSP cross-assembler and DSP library support.

Mario Gardenghi

● X-Debug (£24.95 from ST Club - see review on pages 10-13) will settle your yearning for a source level debugger for use alongside Lattice C. Undoubtedly HiSoft will be offering a Falcon/MultiTOS/Speedo upgrade in the very near future.

Direct to Disk

Peter Jury - Forum STA 28

I There is a cheaper and simpler way of doing direct to disk recording and most of the gear for this set-up can be bought secondhand. You don't get the problem of "flat" sound, i.e. dead or lifeless sound coming from the finished recording. The system requires a midi guitar, a midi keyboard, drum pad, or some other type of controller. You also need a software sequencer. I use Edittrack which supports midi guitars as it understands legato mode.

You will also need:

a) A hard disk, 40MB minimum and with 24ms to 30ms access time. Don't buy a removable hard disk as they garbage midi files and audio files, i.e. samples. I use a Referance 40MB hard disk with ICD software and it works fine.

b) An ST with at least 1MB of memory.

c) A suitable midi type instrument, in my case a Roland GR202 guitar controller and a Roland GM70 GR to Midi converter, a powerful instrument in itself.

d) The last part of the set-up is a suitable midi sound module such as a TX81z which has its own built in effects.

An amplifier or tape deck and mixer is, of course, optional but audio and midi leads are not and don't use cheap midi din leads with your Atari as you should now know that Atari put the midi thru on pins in the middle of the midi socket out of your Atari ST and these leads are prone to having plug pins solder together: you don't need that problem.

You just use you sequencer as a digital multi-track deck by recording midi data from your controller into it and put it on hard disk and floppy disk as a back-up as an insurance, then play the sequence back via the sequencer to midi sound module with the correct channel settings to hear it. Add footswitches and midi merge box and you can create a loop set-up which works.

Anyone wanting advice about setting up such a system can contact me on 081-902-2941, weekdays.

Martin Howard

Deskwriter to ST

Q Is there anyway of connecting a Hewlett Packard DeskWriter 550C (the Macintosh version of the DeskJet) to a Mega STE so I can print to it from Pagestream?

David Blenkinsopp

Calamus User

Q Can you tell me the forwarding address of Calamus User who advertised in *ST Applications*?

After subscribing to them I received issue 1 of their intended newsletter and have since heard or seen nothing. I have written to their PO Box address without reply.

I feel somewhat aggrieved, having once subscribed to SUB for the Sinclair QL (you remember the Sinclair QL?!), receiving the first issue only to find that it was to be the first and last with no trace of a refund.

Am I just unlucky and have suffered a few cross wires, or have I seen the last of my money?

A W Woolcock

● We only have the PO Box number for Calamus User - on request the Post Office will supply the street address for any PO Box. We shall investigate the state of Calamus User.

Mono Chess

Q Where can I get a commercial high quality chess program (other than Oxford Chess) that runs on a mono monitor? Apparently Chessmaster 2175 does not run in mono. Germany perhaps? Any help much appreciated.

J Cavanagh

Swapping Fonts

I If you have Cyber Paint, Paintpot and Fontkit Plus you can make use of this tip. The fonts supplied with Cyber Paint are very average, but Paintpot comes with a number of stylish fonts. Copy these over to the Cyber Paint fonts folder, then get Fontkit as you will need this to edit the font parameters. When you enter the Parameters window you will see a box with 'M68000 format' in it. If there is a tick against it click on the box and the tick will disappear. Next, change the Line Spacing value to a zero. Change the Base Line to 5 and the Descent Line to 2. At least make sure the Descent Line number is lower than the Base Line number. Load them into Cyber Paint and they look good.

D Smith

Help

I It would be helpful to have an article showing a basic set up for a single/dual floppy drive system. Things like the make up of the boot disc, which Accs are most useful, and to explain how the machine reads and processes information, what is held in ram and the most efficient procedures for disc swapping. Probably all simple stuff when you know how, but how difficult on trial and error!

H Beyers

● Keep on reading the Beginners' Forum!

ICD and pun_ptr

Q The ICD software that I have 6.06 does fill in the physical sector fields (patition_start[]), but incorrectly. Well sort of, I think it may be something to do with versions of AHDI that only recognise 4 partitions. That's just a guess, but certainly the _start[] sectors are correct if they were offset by 4. i.e _start[part G] contains the sector for _start[part C], and so on.

The ID before the table was 'ICDB' not 'ICDH' so maybe this is a beta that I shouldn't have.

A Pelled, CIX #481

Pardon?

(Names withheld to protect the innocent)

Q I am having a problem on Gauntlet II. On loading, the green elf loads by itself and then the only way you can play is by pushing the elf around with you, which is hard when it gets stuck in a corner.

Is there any way in which I can get rid of it, or will I have to get a new game? If I do, do you supply copies of Gauntlet II?

● Sorry, we don't play computer games. You should not have to buy a new copy of a game just because the gameplay gets the better of you.

I I have recently purchased an Amiga 1040ST, and I would like to order a catalogue with PD programme designs for the Amiga.

I Jannette Mark 3 - 243. My meat mixer has developed a fault. I enclose the damaged part and I would be very grateful if you could send me the replacement.

● Please remove our return-to-sender labels when re-using ST Club jiffy bags!

Q Do you stock back shelf demo's?

● No. You'll have to stick to top shelf magazines.

DESKTOP DISCUSSIONS

Lynxing Up

It's black, it's a handheld video games console and it's an Atari product. William Hern takes a look at the Lynx's technical specifications and how it is doing against the big boys in the console market, Sega and Nintendo.

ST Applications may proclaim itself as *"The Magazine for Users of Atari ST, STE, Falcon and TT Computers"* but this month I'm going to feature another of Atari's products, the handheld Lynx games machine. Although originally designed by the games software house Epyx, it is now very much an Atari product. With its high quality colour graphics, realistic sound effects and excellent construction, the Lynx has been called the Rolls-Royce of the portable market. In this column I'll try and explain why it has attracted such acclaim.

I'd better apologise right away to those of you who are aghast that I should lower the tone of this august publication by writing about what is, after all, a mere games machine. However, before you turn over the page in disgust for Programmers' Forum, let me assure you that I'll be concentrating on the technical side of the Lynx and not on the games available for it.

Furthermore, keep in mind Atari's current financial situation. Launching a new computer such as the Falcon is a very expensive business and with sales of the STE fading, the success of the FM's return still uncertain and the TT destined to remain forever a niche computer, the Lynx is the only main-stream product that Atari has at the moment. In other words, it's the only big bread-winner and if you want Atari to be around in a year's time to be able to sell the Falcon, you'd better pray for the Lynx's continued success.

In spite of the Lynx's sub-hundred pound price, there's a lot of innovative hardware packed into it from which the designers of the desktop Atari machines could learn a trick or two. The secret of its power lies in two custom co-processing chips called Mikey and Suzy which share all the tasks involved in executing a game program.

Mikey contains the main processor which is 6502-based and runs at up to 4MHz. While this may seem to be a strange choice as the 6502 is an outmoded processor (it was popular in home computers of over a decade ago) there are a number of very good reasons why it was chosen. First, the 6502 is surprisingly powerful considering its low clock speed (many consider its design extremely RISC-like). Low clock speed is important for keeping power requirements down, a matter of prime importance for any system that is battery powered.

Second, 6502 code is a lot more compact than 68000 code (a code routine that might take 1K of 6502 code would probably expand to between 2.5 and 3K on the 68000). While there is potential for games cartridges of up to 2 megabytes in size, today's games are typically 128 or 256 kilobytes long. With cartridges this small, the code efficiency of the 6502 becomes very important.

In addition to the main processor, Mikey is also responsible for the four channel sound. An eight-bit digital to analogue converter allows the use of digitised samples. Unlike the original ST, the main processor is not involved in playing samples, and so gameplay is not slowed down.

The 4096-colour graphics are the responsibility of the sixteen-bit, sixteen-megahertz Suzy chip. In addition to a blitter unit for the fast movement of memory blocks, Suzy has a graphics engine which provides hardware sprites with collision detection, scaling and distortion. Mindful again of cartridge size restrictions, sprites are stored in a compressed format and decompressed automatically on the fly.

The rest of Suzy's chip space is taken up with a maths co-processor which does sixteen bit multiply and divide calculations. The unit has some parallel processing ability in that it can perform one multiplication and one division calculation simultaneously.

Another interesting aspect of the Lynx is its communication ability. In theory up to eighteen players can hook their Lynxes together for multi-player games, although most games have a limit of four. A three wire serial cable is used to connect Lynxes with transmission rates ranging from 300 baud up to 62.5 kilobaud. A "listen and send" policy is used for communication - a Lynx that wants to transmit waits for silence from the other units before beginning transmission. All communication is done without tying up the central processor.

Impressive as the Lynx is, it faces an uphill battle for sales. The competition to the Lynx comes from the big names in the video games business, Sega and Nintendo. Sega's GameGear is a miniaturised version of its successful but ageing Master System console. The market leader though is the Gameboy, which although technically inferior to the Lynx, has the advantage of a vast software library. Its other big pluses are portability - it is about the size of a paperback book - and battery life which, thanks to its monochrome display, is about ten times that of the colour-screened Lynx and GameGear. The number of people to be seen playing Gameboys on trains, buses and the underground is sure proof that it can be taken anywhere.

As you might have guessed from this column, I'm very impressed with the Lynx. Technically it is streets ahead of the competition and there are some great games available for it. If you are thinking of buying a Gameboy or GameGear for yourself or someone else soon, it's worth taking a look at the Lynx first and seeing just what it is capable of.

I'll finish by mentioning the Lynx Developers' Kit. In return for about three thousand dollars, Atari give you a desktop computer with three megabytes of memory and a hard drive plus plug-in hardware to emulate a Lynx. The ironical thing is that the computer provided is not an ST nor a TT but a machine produced by an arch rival. Yes, you've guessed it - it's an Amiga. Who would have thought that you could buy the ST's nemesis from Atari itself!

Programmers' Forum

In this month's packed edition of ST Applications' regular programming column, we revisit the joystick-mouse package published nine months ago, introduce two utility programs, look at making blitting easy and end with a useful printer output function.

Joystick mouse

Back in the Programmers' Forum columns of STA 22 and STA 23, we looked at a letter from **Peter Walker** of Nottingham. Peter wanted to use a joystick plugged into port 1 to control a second mouse pointer. This was to be used to allow a simultaneous two-player mode in a strategy wargame he was writing.

Peter has written again, having finished the game, entitled *Engulf and Devour*. The joystick-mouse option works well in the gameplay. During the development of the game, he wrote a couple of extra functions for the joystick-mouse package which he has kindly agreed to share:

Originally, each time I wrote text to the screen, I would go through the rigmarole of suppressing the mouse, writing the text, and replacing the mouse. Not only was this cumbersome, but it led to a rather ungainly flickering effect - especially with the joystick-mouse. I've added a routine called freeze_joymouse (a historical name rather than a truly descriptive one). This is used to pass a pointer to the co-ordinates (top left/bottom right in short integers) of an 'exclusion zone' where text is going to be written.

If the joystick-mouse is outside this area and remains outside, nothing happens. If the joystick-mouse is in the area, or moves into it, then the cursor is suppressed. Similarly, if the joystick-mouse moves out of this area, it is unsuppressed. This makes writing text to the screen easier and gives a better flicker-free display. A second routine (free_joymouse) removes the exclusion zone.

Thanks to Peter for his contribution. He has come up with a neat and elegant solution to the problem - at one stroke, the screen display is improved, and the main program relieved of the overhead of hiding and showing the cursor.

Unfortunately, to implement these improvements, Peter has had not only to add the freeze_joymouse() and free_joymouse() functions, but also to make small changes to various bits of the existing code. This creates a small problem - how to distribute the modified listing. Since the vast majority of the joystick-mouse package remains unchanged, it seems rather wasteful to reprint the whole listing. Is there a better way?

diff and patch

As might be expected, the answer is 'yes'. The problem of how to distribute changes to a large source file is one that was encountered and solved quite some time ago. The Unix programming environment contains two utility programs that between them provide a neat solution.

The first of these tools, **diff**, processes two versions of a listing, and produces an output file which specifies the changes that need to be made to the first listing to make it identical to the second. This output file is known as a *patch-file*. In order to actually make the changes, a second utility, **patch**, is required. This program reads in the original version of the listing to be updated, and follows the instructions in the patch-file, creating the desired output.

Applying this to the joystick-mouse package, Listing 1 is a patch-file representing the differences between Peter's extended version of the package, and the original assembly language source (Listing 1 of *Programmers' Forum*, STA 23). To obtain the new version of the package, simply run **patch** with the command line:

```
listing1.asc joymouse.asm
```

patch and **diff** are widely available, with source code, as part of the excellent GNU project. The versions used to make these files were Alan Pratt's port of GNU **diff** v1.15, and J Bammi's port of Larry Wall's **patch**. In case anyone has difficulty obtaining these tools, the complete archives are available on **ST Club disk TMP.31**.

As a postscript to the joystick-mouse project, readers with an interest in hardware might be amused to check out the March 1993 issue of Everyday and Practical Electronics, which contains a hardware device that allows a joystick to be plugged into the mouse port!

Blitting in dialogue boxes

On now to a letter from **G A Cox** of Sparkill, Birmingham, who wants to know how to use the VDI blitting routines:

I am writing a program with Lattice C 5.5 which presents a dialogue box inside a single GEM window. I wish to copy the contents of the window to a memory buffer prior to showing the dialogue box, so that the redraw function can restore the window contents after FMD_FINISH is called. The program is mono only. In short, I need to know how vro_cpyfm() works in the above context.

To show how the VDI blitting function vro_cpyfm() can be used to rapidly redraw backgrounds after a dialogue box has been displayed, I have written a short program (Listing 2). The program does not precisely mirror Mr Cox's situation, but should serve to illustrate the point.

The first half of Listing 2 contains fairly standard code to initialise a dialogue box structure and the GEM interface. The two functions to concentrate on are display_dialogue() and blit_dialogue().

In display_dialogue() a main dialogue box is drawn in the centre of the screen. This box contains three buttons: two to invoke the blitting demonstration, and one to terminate the program. If either of the TEST buttons are selected, a second smaller box is displayed on top of the first box. The background under the second dialogue is saved, and then replaced after the 'Cancel test' button is selected. The saving and restoring is performed by the blit_dialogue() function, which acts as a programmer-friendly 'wrapper' for the function that actually does the work: vro_cpyfm().

To see how blit_dialogue() works, we need to take a closer look at vro_cpyfm(). This VDI function is a generalised block transfer routine which is capable of moving a block of screen data from one memory location to another. It has a couple of important properties that make it much more flexible than a simple block copy routine. First, it understands the interleaved screen memory layout of the ST colour display modes. This makes it easy to write resolution-independent code, which is becoming ever more important with the introduction of the Falcon and its new video modes. Secondly, vro_cpyfm() allows more complicated transfers than a straightforward copy. It is capable of merging the incoming block with any existing data according to one of sixteen logical rules.

A vro_cpyfm() call has the general structure:

```
vro_cpyfm(handle,mode,rects,source,dest);
```

The 'handle' argument is the VDI workstation handle, as for most other VDI calls. 'mode' is an integer that specifies how the two blocks of memory are to be combined. The most commonly used value is S_ONLY (3), which causes the destination block to be replaced by the source. Other values allow exclusive-OR merging, inversion, etc. The remaining arguments define which blocks of memory to mani-

pulate. This is done in a seemingly complicated but actually very logical fashion.

The 'source' and 'dest' arguments are pointers to structures which describe the memory areas or forms from which the data will be taken, and to which data will be written. For the type of transfers under consideration here, one form will be a memory buffer where saved background data will be placed, and the other form will refer to the screen. It is perfectly possible to transfer from one part of the screen to another: in this case, both forms will be the screen. The structures that define a form are called MFDBs (Memory Form Definition Blocks), and look like:

`void *fd_addr` This is a pointer to the first word of the form. Forms must start on a word boundary and be a whole number of words wide.
`word fd_w` Width of the form in pixels.
`word fd_h` Height of the form in pixels.
`word fd_wdwidth` Width of the form in words.
`word fd_stand` Forms can be in one of two formats, 'standard' or 'device-specific'. For transfers involving the screen, it is easiest to use the 'device-specific' format, signalled by a value of 0.
`word fd_nplanes` The number of bit-planes in the form. For blits involving the screen, the number of bit_planes for the current screen resolution can be obtained by using the VDI vq_extnd() function.
`word fd_r1` Reserved word
`word fd_r2` Reserved word
`word fd_r3` Reserved word

For transfers to or from physical devices such as the screen, a special form of the MFDB is employed. The fd_addr is filled with a NULL pointer, and all the other fields are left uninitialised.

Having informed the VDI about the layout of the forms to be used, all that remains to be done is to specify which patch of data is to be transferred. The argument 'rects' is a pointer to an array of eight words. The first four of these are the co-ordinates of opposite corners defining the block to be taken from the source form. The last four elements define the block within the destination form into which the data will be placed.

blit_dialogue()

The blit_dialogue() function simplifies this interface somewhat. The function takes six arguments. The first of these is a mode flag that determines whether an area is to be saved or restored. The second argument is a pointer to an information structure (BLIT_INFO) used by blit_dialogue() to store important results. The only field in this structure that should be initialised prior to calling blit_dialogue() is the first, bl_buffer. This should be set to NULL if blit_dialogue() is to perform its own memory management using malloc() and free(). If this is not required, bl_buffer should point to a buffer to be used to store the screen area. In this case, it is the programmer's responsibility to make sure the buffer is big enough...

The final four arguments specify the x and y co-ordinates and the width and height of the area to save or restore. The function returns TRUE if all went well, or FALSE if an attempt was made to restore an area that had not been previously saved, if a memory allocation call failed, or if an invalid BLIT_INFO pointer was passed.

The function is logically divided into two parts , the first dealing with saving screen areas, the second with restoring them. To save an area, the function checks to see whether it should allocate its own buffer. If so, it calculates the amount of memory required and reserves it. An MFDB is then constructed for this buffer. Finally, the function converts the area input co-ordinates, width and height into a rectangle specification. The destination rectangle is positioned at the top left corner of our memory buffer, because we have allocated a buffer no larger than the area to be moved. Once all this has been done, vro_cpyfm() is called to do the transfer.

Restoring a previously saved area is easy. The MFDB for the buffer was initialised when the area was saved, so all that remains to be done is to set up the source and destination rectangles. In this situation, the transfer is done from the top left corner of the buffer, to the part of the screen specified by the programmer. Finally, if the storage buffer was allocated by blit_dialogue() it is returned to the memory pool using free(). Note that area restoration relies on values saved in the BLIT_INFO structure - do not alter or corrupt this structure between a save and a restore.

blit_dialogue() can be used to save several screen areas: each area should simply be given its own dedicated BLIT_INFO structure. If the areas overlap, they should be restored in the reverse order to that in which they were saved.

Problems with printing

For our final letter this month, we move on to a problem with printers. **Eric Pole** from Bracknell, writes:

I am writing a simple program to run under GEM that enables me to change compressions, fonts, etc., on my printer. I have come up against a problem that I have not seen mentioned in any of the books or in any articles on programming.

To send the string of characters to the printer I have tried using the Lattice 'lprintf()' function which is a version of the much used ANSI 'printf()' that sends data to the parallel interface instead of the screen. The weird thing is that having selected my various printer options, nothing is actually sent to the printer until I exit the program, whereupon the commands are sent as one concatenated string. Furthermore, I cannot send printer commands that require a zero as part of the escape sequence (\000). The lprintf() function terminates the string at this point, as this is seen as a string terminator.

In order to keep going, I have come up with a workaround using the BIOS Bconout() function. This can be used to write a single character to a selected output device. I initialise a character pointer to the string I wish to send, define the string length and then call my output function to send the string [Listing 3].

I call the 'Bcostat()' function for each character to prevent the program hanging as 'Bconout()' does not return until the character is actually sent. The function returns an appropriate value that can be acted upon. Without the evnt_timer() call, the software loop is so fast that it beats the interface handshake and returns 'printer not ready'. I have to enter the string length for each string. I cannot use the ANSI 'strlen()' or 'stclen()' calls to return the length of the string automatically, as once again these would prematurely terminate the string at any embedded zero.

This works OK, but it does not look very elegant, and I am sure is far from 'bullet-proof'. I feel I must be missing a trick somewhere.

There are actually two points here. The problem with lprintf() arises because the output is buffered. It is probably buffered until a complete line is assembled (i.e. until a '\n' is sent). To force the buffer to be emptied after each chunk of output, simply use the fflush() function:

```
lprintf(.....);
fflush(stdprt);
```

When a C program terminates normally, all files are flushed before being automatically closed.

The point about not being able to use strings including a NUL character (\000) is well made. Basically, one does have to adopt the approach Eric described, and write a custom output function. One easy way to retain the use of the C string handling functions like strcat(), is to replace any \000 characters in the string with a break character pair, and translate this to the required character in the output function. Listing 4 illustrates how this technique might be implemented.

NEXT MONTH

Next month, *Programmers' Forum* will print more questions and tips from readers' letters. Keep the letters coming in - the more we receive, the better the column gets! Hints on any subjects, or questions about programming problems should be sent to the address below. All contributions, no matter how simple or advanced, are most welcome. Please include your address on the letter, so I can get back to you if anything in your contribution is unclear. Email addresses are useful too.

Please send a disk (or email) if there are large chunks of text or ASCII source code: I have no time to retype lots of material. Naturally, disks will be returned if an SAE is included.

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Listing 1
=========

```
5a6
> ** Improved by Peter Walker, 1992, 1993                    **
13c14
< ** Filename: JOYMOUSE.ASM     Version: 1.01  Date: 23/01/92 **
---
> ** Filename: JOYMOUSE.ASM     Version: 1.03  Date: 06/04/93 **
17c18
<          CSECT     TEXT,0
---
>          SECTION   text
24a26
>          XDEF      _freeze_joymouse,_free_joymouse
39d40
< Supexec           equ       38
178a180,181
>          clr.l     jexclzone           There is no exclusion zone to start with.
>          clr.w     interlock           Initialise our VBL routine as unlocked.
241a245,247
>          subq.l    #8,a5               Point to old mouse packet handler...
>          move.l    (a5),old_mvec       ...save it...
>          move.l    #mous_hook,(a5)     ...and plumb in the replacement.
279a286,287
>          subq.l    #8,a1               Point to our mouse handler...
>          move.l    old_mvec,(a1)       ...and remove it.
292a301,364
> ** Function to freeze the joystick mouse cursor
> ** and the real mouse cursor i.e. they don't
> ** move. This is done by setting the "earmuffs"
> ** to make the joystick package deaf.
> ** The supplied argument details the box in which
> ** the joymouse must be suppressed if it resides
> ** there
> **
> ** Usage: void freeze_joymouse(D_BOX *);
> **
>
> _freeze_joymouse:
>          tst.w     active              Package in use ?
>          bne.s     1$                  Yes, proceed to freeze.
>          rts
> 1$       move.l    4(sp),d0            Get pointer to D_BOX
>          movem.l   d1-d7/a0-a6,-(sp)   Save the registers used.
>          subq.w    #1,interlock        Lock out our VBL routine.
>          move.l    d0,jexclzone        And save it as pointer to exclusion zone
>          clr.w     jblinked            Assume joymouse is not suppressed.
>          clr.w     jnoblink            Assume also that it is not blinkable.
>          lea       A_vars,a5           Address our variable area.
>          dc.w      LineA_Hide_Mouse    Mouse must be hidden.
>          tst.w     jhidden             Is the joystick hidden?
>          bne.s     2$                  If yes, don't hide it.
>          st        jnoblink            If no, then it must be blinkable.
>          move.l    4(a5),d0            Fetch jx and jy together.
>          jsr       chk_excl            Check to see if joymouse is in excl zone.
>          tst.w     d0                  Is joymouse in excl zone?
>          beq.s     2$                  If not, there is no need to hide it.
>          bsr       _hide_joymouse      If yes, then we must hide the joymouse...
>          move.w    #1,jblinked         ... & flag that the joymouse is
suppressed.
> 2$       addq.w    #1,interlock        Release our VBL routine.
>          movem.l   (sp)+,d1-d7/a0-a6   Recover registers.
>          rts
>
> ;---------------------------------------------------------------------------
> **
> ** Function to free the joystick mouse cursor
> ** and the real mouse cursor i.e. they resume
> ** movement. This is done by setting the "earmuffs"
> ** to make the joystick package hear again.
> **
> ** Usage: void free_joymouse(void);
> **
>
> _free_joymouse:
>          tst.w     active              Package in use ?
>          bne.s     1$                  Yes, go to it.
>          rts
> 1$       movem.l   d1-d7/a0-a6,-(sp)   Save the registers used.
>          subq.w    #1,interlock        Lock out our VBL routine.
>          cmp.w     #1,jblinked         Has joymouse been suppressed?
>          bne.s     2$                  If not, don't redisplay.
>          bsr       _show_joymouse      Redisplay joymouse.
> 2$       clr.l     jexclzone           Rescind exclusion zone
>          move.l    #our_intin,INTIN(a4)
>          dc.w      LineA_Show_Mouse    Mouse must be redrawn.
>          addq.w    #1,interlock        Release our VBL routine.
>          movem.l   (sp)+,d1-d7/a0-a6   Recover registers.
>          rts
>
> ;---------------------------------------------------------------------------
> **
308c380
<          st        interlock           Lock out our VBL routine.
---
>          subq.w    #1,interlock        Lock out our VBL routine.
319c391
<          clr.w     interlock           Release our VBL routine.
---
>          addq.w    #1,interlock        Release our VBL routine.
342c414
<          st        interlock           Lock out our VBL routine
---
>          subq.w    #1,interlock        Lock out our VBL routine
354,355c426,428
< 2$       move.w    8(a5),d0            Reprint joystick cursor.
<          move.w    10(a5),d1           Get joystick cursor jx and jy.
---
> 2$       move.l    8(a5),4(a5)            Reprint joystick cursor.
>          move.w    4(a5),d0            Reprint joystick cursor.
>          move.w    6(a5),d1            Get joystick cursor jx and jy.
361c434
< 3$       clr.w     interlock           Free our VBL.
---
> 3$       addq.w    #1,interlock        Free our VBL.
542,543c615,617
<          move.w    V_MOUSE_BT(a0),d1   Fetch the mouse button status.
<          and.w     #1,d1               Mask all except the left button.
---
>          move.b    jbutton,d1          Fetch the mouse button status.
>          and.w     #2,d1               Mask all except the left button.
>          lsr.w     #1,d1               Answer is now 1 or 0.
564,572c638,640
<          tst.w     interlock           Are we allowed to process ?
<          bne       5$                  No, skip out.
<          move.l    8(a5),d0            Fetch jx and jy in one go.
<          cmp.w     6(a5),d0            Same as before [ojy] ?
<          bne.s     1$                  No, we must consider redrawing.
<          swap      d0                  jx in low word now.
<          cmp.w     4(a5),d0            Same as before [ojx] ?
<          bne.s     1$                  No, do the redraw.
<          move.w    14(a5),use_jdx      Restore old speed.
---
>          tst.w     jmoved              Is there any movement to process?
>          bne       1$                  Yes, skip to accelerate & draw.
>          move.w    14(a5),use_jdx      No, Restore old speed.
574,575c642,644
<          bra.s     5$                  Skip over the drawing code.
< 1$       tst.w     18(a5)              Any acceleration [jaccn] ?
---
>          jmp       8$                  ...& Skip over the drawing code.
> 1$       clr.w     jmoved              Reset movement flag.
>          tst.w     18(a5)              Any acceleration [jaccn] ?
588,589c657,677
< 3$       tst.w     12(a5)              Allowed to print cursor [j_hidden] ?
<          bne.s     5$                  No, just exit now.
---
> 3$       tst.w     interlock           Are we allowed to process ?
>          bne       8$                  No, bypass drawing code.
>          tst.l     jexclzone           Is there an exclusion zone in force?
>          beq.s     5$                  If not, bypass exclusion zone code.
>          tst.w     jnoblink            Is the joystick blinkable?
>          beq.s     5$                  If not, bypass exclusion zone code.
>          move.l    8(a5),d0            Fetch jx and jy in one go.
>          jsr       chk_excl            Check to see if joymouse is in excl zone.
>          tst.w     d0                  Is joymouse in excl zone?
>          beq.s     4$                  If not, go to check if it needs to be
unblinked.
>          tst.w     jblinked            In zone; has it been blinked already?
>          bne.s     7$                  If yes, don't blink it again.
>          bsr       _hide_joymouse      Turn the cursor off.
>          move.w    #1,jblinked         Flag that joymouse is suppressed.
>          bra.s     7$                  And then continue as normal.
> 4$       tst.w     jblinked            Out of zone; is it blinked off?
>          beq.s     5$                  If not, there is no need to put it back
on.
>          bsr       _show_joymouse      If yes, it must be reshown.
>          clr.w     jblinked            Flag to indicate joymouse not blinked off.
> 5$       tst.w     12(a5)              Allowed to print cursor [j_hidden] ?
>          bne.s     7$                  No, just exit now.
593c681
<          bne.s     4$                  Yes, so skip it.
---
>          bne.s     6$                  Yes, so skip it.
595c683
< 4$       lea       98(a5),a2           Joystick cursor save area [save_area].
---
> 6$       lea       98(a5),a2           Joystick cursor save area [save_area].
603c691
<          bne.s     5$                  No, so skip.
---
>          bne.s     7$                  No, so skip.
606,607c694,695
< 5$       move.l    8(a5),4(a5)         Update ojx and ojy.
<          lea       Kbd_ACIA_cntrl,a0   Point to keyboard serial link.
---
> 7$       move.l    8(a5),4(a5)         Update ojx and ojy.
> 8$       lea       Kbd_ACIA_cntrl,a0   Point to keyboard serial link.
609c697
<          beq.s     6$                  No, skip this time around.
---
>          beq.s     9$                  No, skip this time around.
611c699
< 6$       rts
---
> 9$       rts
652a741,767
> **
> ** Subroutine to determine whether or not the
```

```
> ** joymouse is in the exclusion zone.
> **
> **    Inputs:       d0.l = x & y coords of joymouse
> **    Outputs:      d0.w = Zero if not in zone, else 1.
> **    Destroys:     a4
> **
>
> chk_excl  move.l    jexclzone,a4        Plonk pointer to exclusion zone in
register.
>           sub.w     #48,d0              Compensate for hot spot?
>           cmp.w     6(a4),d0            Is joy y coord below box?
>           bgt.s     1$                  If yes, return - not in zone.
>           add.w     #96,d0              Calc bottom of joymouse (plus some?)
>           cmp.w     2(a4),d0            Is joy y above box?
>           blt.s     1$                  If yes, return - not in zone.
>           swap      d0                  Now process joy x coord.
>           sub.w     #49,d0              Compensate for hot spot (plus some)?
>           cmp.w     4(a4),d0            Is joy x coord to left of box?
>           bgt.s     1$                  If yes, return - not in zone.
>           add.w     #96,d0              Calc right edge of joymouse (plus some?)
>           cmp.w     (a4),d0             Is joy to right of box?
>           blt.s     1$                  If yes, return - not in zone.
>           moveq     #1,d0               Flag that the joymouse is in the excl
zone.
>           rts
> 1$        moveq     #0,d0               Flag that joymouse is NOT in the excl
zone.
>           rts
665c780
< pack_hook movem.l   d0-d2/a0,-(sp)      Save what we use.
---
> pack_hook movem.l   d0-d3/a0,-(sp)      Save what we use.
669c784,785
<           bne       5$                  No, skip the processing.
---
>           bne       6$                  No, skip the processing.
>           clr.w     d3                  Used to indicate if any movement.
679a796
>           addq.w    #1,d3               Flag that movement has occured.
686a804
>           addq.w    #1,d3               Flag that movement has occured.
695a814
>           addq.w    #1,d3               Flag that movement has occured.
702a822
>           addq.w    #1,d3               Flag that movement has occured.
704,707c824,830
<           move.l    A_vars,a0           Point to LineA variables.
<           move.w    V_MOUSE_BT(a0),d0   Fetch mouse button status.
<           and.w     #2,d0               Strip all except right button.
<           lsr.w     #1,d0               Answer is now 1 or 0.
---
>           add.w     d3,jmoved           Increment movement counter.
>           tst.w     d3                  Has movement occured?
>           beq.s     5$                  If not, check fire button.
>           clr.w     jfire               If yes, suppress fire button.
>           bra.s     6$                  Exit after resetting regs.
> 5$        move.b    jbutton,d0          Fetch mouse button status.
>           and.w     #1,d0               Strip all except right button.
709c832
< 5$        movem.l   (sp)+,d0-d2/a0      No registers disturbed.
---
> 6$        movem.l   (sp)+,d0-d3/a0      No registers disturbed.
712a836,852
> ;=========================================================================
> **
> ** The new mouse packet handler.  This is
> ** called from the MFP IKBD ACIA interrupt handler
> ** to process a mouse packet.
> **
>
>           dc.l      'XBRA'
>           dc.l      XBRA_ID
> old_mvec  dc.l      0
>
> mous_hook move.b    (a0),jbutton
>           move.l    old_mvec,a1
>           jsr       (a1)
>           rts
>
>
722c862
<           CSECT     DATA,0
---
>           CSECT     asmdata,data
726c866
<           CSECT     BSS,0
---
>           CSECT     asmbss,BSS
740a881,885
> jblinked  ds.w      1                   Flag if joymouse suppressed during freeze
> jnoblink  ds.w      1                   Flag if joymouse not suppressable during
freeze
> jexclzone ds.l      1                   Pointer to mouse/joystick exclusion zone
> jbutton   ds.b      1                   1st byte of mouse vector packet.
> jmoved    ds.w      1                   Joystick movement counter.
```

Listing 2
=========

```
/*
** Listing 2.
** Programmers' Forum STA 31 (July 1993)
**
** Example program showing how to use the VDI blit
** function vro_cpyfm to restore the screen from a
** memory buffer.  Useful for quick redraws after
** dialogue boxes.
**
** Compiler system: Lattice C v5.52
** Compile options: Phase 1: -cargfku Phase 2: -ms
** Link with C.O, LCG.LIB and LC.LIB
** Written on 24th May 1992
*/

#include <aes.h>
#include <portab.h>
#include <stdlib.h>
#include <vdi.h>

/*
** Resource information, processed using the
** DERCS tool...
*/

#define TEST1       2                   /* Indices for MAINBOX          */
#define TEST2       3
#define CANCEL      4

#define TESTEXIT    1                   /* Indices for BLITBOX          */

TEDINFO rs_tedinfo[] = {
/*0*/   {"Screen saving by blitting", "", "", IBM,0,TE_CNTR,0x1111,0,1,26,1},
/*1*/   {" Cancel test ", "", "", IBM,6,TE_LEFT,0x1181,0,-1,14,1},
};

OBJECT MAINBOX[] = {
/*0*/   {-1,1,4,G_BOX,0x0,0x10,(void *)0x21100,3,1,30,10},
/*1*/   {2,-1,-1,G_BOXTEXT,0x0,0x10,&rs_tedinfo[0],2,1,26,2},
/*2*/   {3,-1,-1,G_BUTTON,0x40,0x20,"Test 1", 4,5,8,1},
/*3*/   {4,-1,-1,G_BUTTON,0x40,0x20,"Test 2", 18,5,8,1},
/*4*/   {0,-1,-1,G_BUTTON,0x27,0x0,"Exit", 11,8,8,1},
};

OBJECT BLITBOX[] = {
/*0*/   {-1,1,1,G_BOX,0x0,0x10,(void *)0x21100,2,1,19,3},
/*1*/   {0,-1,-1,G_BOXTEXT,0x27,0x20,&rs_tedinfo[1],3,1,13,1},
};


/*
** Program symbols...
*/

#define BITS_PER_BYTE   8
#define BITS_PER_WORD   16
#define BYTES_PER_WORD  2

#define BL_SAVE         0
#define BL_RESTORE      1

#define BLP_MALLOCED    1
#define BLP_SAVED       2


/*
** A structure type used by the blitting system...
*/

typedef struct  {
                char *bl_buffer;        /* Pointer to save area         */
                int bl_private;         /* Private storage area         */
                MFDB bl_form;           /* VDI form for blit object     */
                }
                BLIT_INFO;

/*
** Global variables...
*/

short handle;                           /* Program's VDI handle         */
short ap_id;                            /* Program's AES identifier     */
short screen_width;                     /* Width of screen in pixels    */
short screen_height;                    /* Height of screen in pixels   */
short screen_planes;                    /* Number of colour planes      */


/*
** Function prototypes...
*/

int initialise_gem(void);
int main(int,char **,char **);
void display_dialogue(void);
void exit_gem(void);
void fix_tree(OBJECT *,int);
void initialise_resource(void);

int blit_dialogue(int,BLIT_INFO *,short,short,short,short);
```

```
/*
** The program starts here...
*/

int main(argc,argv,envp)

int argc;
char **argv, **envp;

{
    if (initialise_gem() == FALSE)
        return (1);
    initialise_resource();
    display_dialogue();
    exit_gem();
    return (0);
}


/*
** Function to initialise the GEM system,
** setting up some global variables with useful
** information.  There are no arguments.  The
** return value is TRUE if all went well, or
** FALSE, when the program should not make
** any further GEM calls.
**
** Usage:   result = initialise_gem();
**
**          int result, initialise_gem(void);
*/

int initialise_gem(void)

{
    short work_in[11], work_out[57];
    short f, physical_handle, dummy;

    if ((ap_id = appl_init()) == -1)
        return(FALSE);
    physical_handle = graf_handle(&dummy,&dummy,&dummy,&dummy);
    for (f=0; f<10; f++)
        work_in[f] = 1;
    work_in[10] = 2;
    v_opnvwk(work_in,&handle,work_out);
    if (handle == 0)
        {
        appl_exit();
        return(FALSE);
        }
    screen_width = work_out[0] + 1;
    screen_height = work_out[1] + 1;
    vq_extnd(handle,1,work_out);
    screen_planes = work_out[4];
    graf_mouse(ARROW,0);
    return(TRUE);
}


/*
** Function to shut down the GEM system after
** a successful initialisation.  There are no
** arguments and no return values.
**
** Usage:   void exit_gem(void);
*/

void exit_gem(void)

{
    v_clsvwk(handle);
    appl_exit();
}


/*
** Function to initialise the resource information.
** In this case, where the resource data is embedded,
** we only need to fix up the coordinates.  If a
** separate resource file were to be used, the rsrc_load
** call would go here.
**
** Usage:   void initialise_resource(void);
*/

void initialise_resource(void)

{
    fix_tree(MAINBOX,4);
    fix_tree(BLITBOX,1);
}


/*
** Function to fix up an object tree.  This is
** the fix-up function output by DERCS.  The
** arguments are a pointer to an object tree,
** and the index of the last object to be fixed
** up.  There are no returns.
**
** Usage:   fix_tree(tree,last);
**
**          void fix_tree(OBJECT *, int);
*/

void fix_tree(tree,last)

OBJECT *tree;
int last;

{
    int f;

    for (f=0; f<=last; f++)
        rsrc_obfix(tree,f);
}


/*
** Function to display the dialogue box on
** the screen and to manage its interaction
** with the user.  There are no arguments
** and no returns.
**
** Usage:   void display_dialogue(void);
*/

void display_dialogue(void)

{
    OBJECT *mainbox, *blitbox;
    BLIT_INFO blit;
    short mx, my, mw, mh, button;
    short bx, by, bw, bh;

    mainbox = MAINBOX;
    form_center(mainbox,&mx,&my,&mw,&mh);
    blitbox = BLITBOX;
    form_center(blitbox,&bx,&by,&bw,&bh);
    blit.bl_buffer = NULL;

    form_dial(FMD_START,0,0,0,0,mx,my,mw,mh);
    objc_draw(mainbox,0,9,mx,my,mw,mh);
    do
        {
        button = form_do(mainbox,0) & 0x7FFF;
        if (button == TEST1 || button == TEST2)
            {
            if (blit_dialogue(BL_SAVE,&blit,bx,by,bw,bh) == FALSE)
                return;
            objc_draw(blitbox,0,9,bx,by,bw,bh);
            (blitbox+(form_do(blitbox,0) & 0x7FFF))->ob_state &= ~SELECTED;
            if (blit_dialogue(BL_RESTORE,&blit,bx,by,bw,bh) == FALSE)
                return;
            }
        (mainbox+button)->ob_state &= ~SELECTED;
        }
    while (button != CANCEL);
    form_dial(FMD_FINISH,0,0,0,0,mx,my,mw,mh);
}


/*
** Function to handle the saving and restoring
** of screen underneath a dialogue box.  The
** arguments are a mode flag, BL_SAVE to save
** the screen image to a buffer, BL_RESTORE
** to replace the screen image; the address of
** a blit information block, and the screen
** coordinates of the area.  The return value
** is TRUE if the call succeeded, or FALSE if
** a malloc failed or if BL_RESTORE was used
** before BL_SAVE.
**
** Usage:   result = blit_dialogue(mode,bufptr,x,y,w,h);
**
**          int result;
**          int blit_dialogue(int,BLIT_INFO *,short,short,short,short);
*/

int blit_dialogue(mode,info,x,y,w,h)

int mode;
BLIT_INFO *info;
short x, y, w, h;

{
    MFDB screen;
    short blit_coords[8];
    long memory;

    screen.fd_addr = NULL;
    if (mode == BL_SAVE)
        {
        info->bl_private = 0;
        if (info->bl_buffer == NULL)
            {
            info->bl_private |= BLP_MALLOCED;
            memory = w * screen_planes;
```

```
            memory = (memory + BITS_PER_WORD-1) / BITS_PER_WORD;
            memory *= (BYTES_PER_WORD * h);
            if ((info->bl_buffer = malloc(memory)) == NULL)
                return(FALSE);
            }
        info->bl_form.fd_addr = info->bl_buffer;
        info->bl_form.fd_w = w;
        info->bl_form.fd_h = h;
        info->bl_form.fd_wdwidth = w / BITS_PER_WORD + (w % BITS_PER_WORD != 0);
        info->bl_form.fd_stand = 0;
        info->bl_form.fd_nplanes = screen_planes;

        blit_coords[0] = x;
        blit_coords[1] = y;
        blit_coords[2] = x + w - 1;
        blit_coords[3] = y + h - 1;
        blit_coords[4] = blit_coords[5] = 0;
        blit_coords[6] = w - 1;
        blit_coords[7] = h - 1;
        vswr_mode(handle,MD_REPLACE);
        graf_mouse(M_OFF,0);
        vro_cpyfm(handle,S_ONLY,&blit_coords[0],&screen,&info->bl_form);
        graf_mouse(M_ON,0);
        info->bl_private |= BLP_SAVED;
        }

    else if (mode == BL_RESTORE)
        {
        if (!(info->bl_private & BLP_SAVED))
            return(FALSE);
        blit_coords[0] = blit_coords[1] = 0;
        blit_coords[2] = w - 1;
        blit_coords[3] = h - 1;
        blit_coords[4] = x;
        blit_coords[5] = y;
        blit_coords[6] = x + w - 1;
        blit_coords[7] = y + h - 1;
        vswr_mode(handle,MD_REPLACE);
        graf_mouse(M_OFF,0);
        vro_cpyfm(handle,S_ONLY,&blit_coords[0],&info->bl_form,&screen);
        graf_mouse(M_ON,0);
        if (info->bl_private & BLP_MALLOCED)
            {
            free(info->bl_buffer);
            info->bl_buffer = NULL;
            info->bl_private &= ~BLP_MALLOCED;
            }
        info->bl_private &= ~BLP_SAVED;
        }
    return (TRUE);
}
```

Listing 3
=========

```
/*
** Listing 3.
** Programmers' Forum STA 31 (July 1993)
**
** Program fragment from Eric Pole showing how to
** send NUL characters to the printer.
*/


            .
            .
            .
    strg_ptr = "This is the text\n";
    strg_len = 17;
    ready = printout(strg_len,strg_ptr);
            .
            .
            .


int printout(strg_len,strg_ptr)

int strg_len;
char *strg_ptr;

{
    char code;
    int count;

    for (count=1; count<=strg_len; count++)
        {
        if (!Bcostat(0))        /* Printer not ready    */
            return (0);
        code = *strg_ptr;
        Bconout(0,code);
        ++strg_ptr;

        evnt_timer(1,0);        /* Wait 1 ms            */
        }
    return (-1);                /* Done                 */
}
```

Listing 4
=========

```
/*
** Listing 4.
** Programmers' Forum STA 31 (July 1993)
**
** Program fragment demonstrating how to use a break
** character system to circumvent the problem of not
** being able to have embedded NULs in C strings.
**
** Compiler system: Lattice C v5.52
** Compiler options: -cargfku -ms
** Link with C.O and LC.LIB
** Written on 22/04/92
*/

#include <osbind.h>
#include <time.h>


#define TIMER           30              /* Timeout after 30s            */
#define PARALLEL        0               /* BIOS code for Centronics     */
#define PRINT_OK        0               /* All done OK                  */
#define PRINT_UNKNOWN   -1              /* Unknown break character      */
#define PRINT_TIMEOUT   -2


/*
** Define strings to be sent to the printer...
*/

char *roman = "\033x\001\033k$0";       /* Select Roman NLQ on FX85     */
char *test = "This should print one dollar symbol >$$<\n";


/*
** Use the function like this...
*/


    .
    .
    .
    print_string(roman);
    print_string(text);
    .
    .
    .


/*
** Function to write the specially encoded
** string to the printer, making appropriate
** substitutions where indicated.  The argument
** is a pointer to a normal NULL terminated C
** string which may contain the following special
** characters:  $0  Output ASCII NUL
**              $$  Output $ character
** This list can easily be extended as required. The
** return value is one of:
**      PRINT_OK        All output was sent correctly
**      PRINT_UNKNOWN   Unknown character found after break character
**      PRINT_TIMEOUT   Printer timed out.
**
** Usage:   result = print_string(text);
**
**          int result, print_string(char *);
*/

int print_string(text)

char *text;

{
    time_t countdown;
    char c;

    while (c = *text++)
        {
        if (c == '$')
            {
            c = *text++;
            if (c == '0')
                c = '\0';
            else if (c == '$')
                ;                       /* Do nothing                   */
            else return (PRINT_UNKNOWN);
            }
        countdown = time(NULL);
        while (Bcostat(PARALLEL) == 0)
            if (time(NULL) >= countdown + TIMER)
                return (PRINT_TIMEOUT);
        Bconout(PARALLEL,c);
        }
    return(PRINT_OK);
}
```

CAD Column

Joe Connor comes back from Germany with a bagful of goodies...

On a recent visit to Germany I took the opportunity to peruse the latest products in Eickmann Computer GmbH who were helpful and friendly. We chatted about the Falcon and they claimed around 50 sales, many of them in Eickmann's custom Tower cases. Copies of every software package I could think of lined the shelves and I spent a happy hour nosing through them. I purchased a blindingly fast Hard disk optimiser called Crypton (£41) and a graphic file converter called Karma (£25) which reads over 100 formats (including 6 different TIF versions) and writes these seven formats: PCX, BMP, PAC, IMG, TIF, PIC and PI3. Various hardware kits caught my eye including a gadget to increase the resolution of the Atari SLM804 from 300x300 dpi to 600x300 dpi but I restrained myself.

There are a couple of new Graphics cards around for MEGA STE and TT owners, cancelling the need to buy a Falcon for the extra graphics resolutions.

The Sang MEGA Vision 300 True colour Card features an Inmos G300 video controller and 1Mb of Video RAM offering a wide range of resolutions up to a maximum 1280x1024 in 16 colours at 67Hz non-interlaced. Lower resolutions offer a choice of 256 colours from a palette of 16.7 million. A Genlock option is available. VDI driver, Install software and other utility software included. Retail price somewhere around 1200DM.

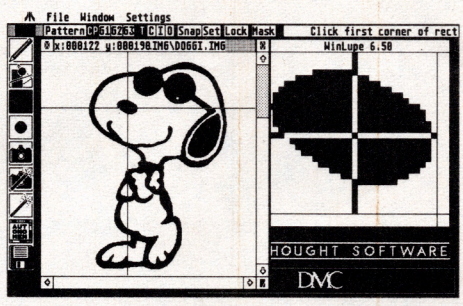
Contact: Sang Computersysteme GmbH, Kruppstrasse 82 (ETEC), W-4300 Essen 1. Tel: 010 49 201820200; Fax: 010 49 2018202040.

From Canada the CyReL SUNRISE M16-1280 True Colour card offers an even higher spec! 2Mb of Video RAM, freely programmable resolutions up to 2048x960 at 90Hz non-interlaced! The software included is all MultiTOS compatible, and here are a few examples: an install utility, VDI driver, GIF, PCX, TGA and JPEG file viewers.

A TT can drive up to 4 CyReL cards for video walls or large screen presentations. Options include a LAN port for transmission speeds up to 10 Mb/second. Retail prices are US $1495 or Canadian $1795.

Contact: DMC Publishing Inc, 2800 John Street, Suite 10, Markham, ON, L3R 0E2, Canada. Tel: (416) 479 1880; Fax: (416) 479 1882.

Winlupe, a glass act?

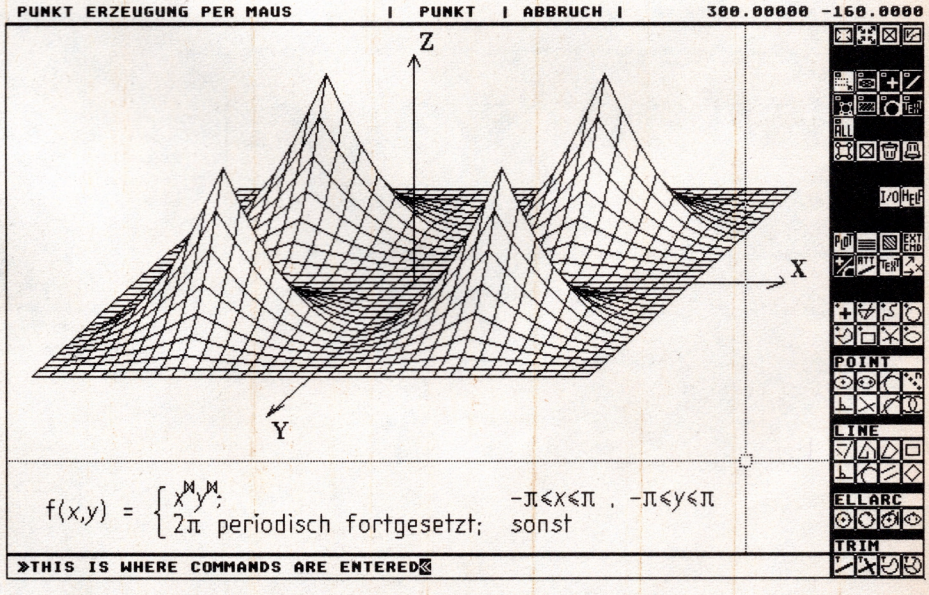


Winlupe is a Freeware German utility which adds a small window displaying the area surrounding the cursor (lupe means magnifying glass). This can be particularly useful inside CAD/Graphics applications which do not provide a suitable built-in utility.

Invision, itself windows based (see review in STA30) can make particularly good use of Winlupe.

Winlupe can be installed as an .APP and run from the desktop, which is ideal for MultiTOS use, or renamed with an .ACC extender and run as a Desktop Accessory. The Winlupe window can be freely sized but larger windows result in slower updates because more pixels have to be generated. To optimise the trade off between performance and features a whole host of configurations are provided. The main options enable: real time magnification and scroll bar updates, show/hide cursor and inverse video.

The program also includes on-line help which is not much help if you don't understand German. I've written to the author to request an English version and I hope this will be available by the time you read this. Happily Winlupe runs fine with the default values and when it's running the language isn't a problem.



ZPCAD V1.00

ZPCAD is an anachronism: it's Freeware, ignores the GEM interface in favour of a custom DOS style interface, and then adds its own icons, dialogs and file selector. What a waste of effort! The final surprise is that ZPCAD is usable and (apart from the German) easy to get up and running.

Commands are selected using the mouse or by entering keywords and parameters into the command line along the bottom of the screen. Comprehensive (but German) help menus are available to guide the polyglot through the maze of options.

All the usual drawing, editing and layer tools are there and are selected by working down through a hierarchy of icon menus. Good use is made of both mouse buttons: the left selects functions and the right cancels them.

I ran into a few problems. ZPCAD only supports 640x400 resolution and I couldn't find the dimension commands or claimed DXF and HGPL import/export options but there is so much documentation included I probably just can't find the relevant commands - yet.

ZPCAD is an interesting package capable of professional quality results.

Contact: Burkhard E. Strauss, ZP Systems, c/o Ingenieurbüro rism, Bergstrasse 25, 5100 Aachen, Germany.

Classified Adverts

Classified adverts are free to subscribers.

Please use the form on page 58.

For Sale

Atari STE with 4Meg Ram and C16 '286 Module – £300, Hand Scanner and S/W – £50, Power Drive 900e (40mb) – £100, Hisoft Basic 2 – £35, Replay professional – £35, Fast Basic cartridge – £20, Lattice C – £50, Roland D110 Midi Module – £200. Selling because of change of machine. Phone Tim 081–464–2850 (answerphone). (32)

GFA Basic (Interpreter, compiler and shell) £25, Hisoft PTL Modula 2 – £20, Hisoft Basic 1 –£20, Hisoft Wercs – £10, Hisoft C (Interpretor) – £20, MPE Forth – £10, Hisoft Forth – £10, Hisoft Lattice C V5.5 – £60. Address:– 68 Osprey Road, Biggleswade. Beds, SG18 8HE. Contact: Neil Bingham 0767–316879. (32)

Atari 520 STFM, Upgraded to 1 Meg RAM & 1 Meg Internal Floppy E100 including some Commercial Software (NeoDesk, Timeworks DTP & others) & some PD Software; Atari SM125 Mono Monitor with tilt & swivel base £75; Panasonic KXP1124, excellent 24–pin printer £100. Will sell separately or £250 the lot! All items in full working order. Contact Jon or Helen (0728) 688909. (32)

Must clear my shelves! Hyperpaint 2 – £8.00; Borodino – £4.00; STOS V2.5 – new copy – £6.00; 0.5 Meg Simm for 0.5 –> 1 Meg STE Upgrade – £6.00; 2,000 sheets of 80 GSM continuous A4 paper – £12.00; Centronics Printer Cable (new & still sealed in bag) – £4.00. Contact John Weller, 49 Haylett Gardens, Surbiton Crescent, Kingston, Surrey KT1 2ER. Phone: (081) 5460993. (32)

Infocom games at £8 each including Bureaucracy, Zork I, and II, Stationfall, etc. Also many RPG/Adventures from £5. Cameron Handy Scanner £40. Ring (081) 395 4853 between 6–10pm for details or send a SAE to Ian Taylor, 43 Onslow Gardens, Wallington, Surrey SM6 9QH. (33)

Atari 1040 STE + 4Mb Upgrade, PageStream 1 + 2, Timeworks, 1st Word Plus, STOS, 20 games, 2 Joy Sticks, all boxed as new with manuals £275 ono. Philips CM8832 Colour Monitor boxed £120, 20Mb Hard Disc boxed £80, Blitz Turbo External Drive boxed £50, Tel Barnsley (0226) 716073 anytime. (33)

MCC Pascal £25, Scrabble De Luxe £12. Both original with box/manuals. 0332 832829. (32)

Philips 8833 Colour Monitor – Less than 20 hours' use, boxed, buyer collects £120; Protext 5.02 £40; K Spread 4.15 £40; Timeworks 1.12 £20; Fontkit Plus 3.4 £8; Quick ST 3.03 £8; Easy–Text Plus 1.3 (9 Pin) £5; GFA Basic 2 + Vector £5. All original discs used once only. All manuals as new or excellent condition. – 0234 740679 (Bedford). (32)

Disc Drive 5.25" half height, cased inc power supply, 40–80 tracks. Some discs as new – offers or exchange small Midi Instrament. 0656 860114–Jeff, 32 Glan–y–nant, Pencoed, Mid Glam. (32)

One Meg Atari STFM, TOS 1.4, Atari Mono and Colour Monitors, External Drives, 50 Meg Hard Drive, Hand Scanner, Clock, Star LC Printer, Lots of Software – Superbase 2, Timeworks 2 v3.2, Imagecopy, Caligrapher Pro, Logistixs. loads of games, loads of PD Software, loads of Disks, Over 60 Atari Mags , complete with Coverdisks, plus much more – Phone 0295 262434 after 6pm. Complete package £475. (will not split). Buyer must arrange collection. (31)

Atari 520 STFM, loads of disks, Atari magazines, ST Formats, ST Worlds. Complete with joystick (zip–stick), mouse and all leads. Selling to upgrade. Quick sale at £150. Phone James (0772) 718730. (33)

HP Deskjet 500 Epson FX–80 Printer Emulation Cartridge £35 inc. p&P. 081–851 5942 after 7pm. (32)

Superbase Professional £30.00, Lattice C (V3.04) £15.00, Grafix Logistix (Spreadsheet) £15.00, GFA Draft Plus £15.00. All with original disks and manuals. Books:– Gen Programmers Reference, ST Disk Drives Inside and Out, ST Internals, (all by Abacus) £5.00 each. Postage extra. 0403 255795 (Horsham) after 8pm/weekends. (31)

Vidi ST Video Digitiser with Software and Cables. £50.00 ono. High Speed Pascal 1.5 £30 ono. Phone Tim 0322–275755. (Dartford). (33)

Devpac TT £12. Original in box with manual. Tel (0232) 660302. (31)

C–Lab Notator/Creator Midi Program V3.0 with option for latest upgrade – prestine condition £275 ono. Eddie Prentice (0289) 303238. (32)

Timeworks Publisher 2 as new complete £60.00. Eddie Prentice (0289) 303238. (32)

3D Construction Kit II with Video (In German!) new, unregistered – £25.00 or swap Knights of the Skies. – Fool's Errand, Gravity, Mystical – £5.00 or swap W.H.Y. – Tel 0709 372970 (Rotherham). (32)

Hard Disc, Gasteiner 105 Mbyte (Quantum 11ms) lightly used, one year old – £300, External 5.25 inch Disc Drive inc. PSU £50.00, Spectre GCR incl ROMs – only £200, Supercharger External IBM Emulator plugs into DMA Port – £80. Phone Andrew 031 556 4913 (Edinburgh). (33)

Master Sound 2 £10, Playback Cartridge £10 or both for £18.00. Easytext Professional DTP with extra Fonts £30, Digita Home Accounts (Original version) £5. All come with manuals & cartridges (If applicable). Help with installation/use freely given. Tel Mike on 0742 618940 anytime. (33)

Authorware

If you would like to see your software featured in the ST Applications Authorware column please send us a review copy of the software and a rough outline of the advertising copy you would like to be printed.

Morse Master

The complete morse trainer and simulator, with realistic 'on-air' emulator and integral editor, with complete control of your listening equipment. In addition to sending, your Atari can also receive and decode morse from your own key using the supplied interface cable. Send Cheque/PO for £29.99 payable to Boscad Ltd at: 16 Aytoun Grove, Balbridgeburn, Dunfermline, Fife, KY12 9TA. Telephone (0383) 729584 evenings for technical information.

STEN

ST ENthusiasts disk magazine - for your copy send a disk + SAE to: Dave Mooney, 14 School Road, Morningside, Newmains, Lanarkshire.

SynTax

The ST adventure magazine on disk! Reviews, solutions, hints, special features and much, much more. Runs in colour only. Produced bi-monthly. SynTax costs £3.50 an issue, £20 for a year's subscription. Cheques made payable to S. Medley should be sent to: 9 Warwick Road, Sidcup, DA14 6LJ.

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Calamus Manual

This self-tutorial guide incorporating sections on frame drawing, entering text, changing fonts and styles, importing text and images, drawing boxes and lines, loading, saving, printing, text rulers, headers and footers and page numbers. Available at £5 (including postage) from: David Waller, The Sandon School, Molram's lane, Great Baddow, Chelmsford, Essex, CM2 7AQ. Cheques should be made out to 'Sandon School'.

Genealogy

Newgen, my genealogy program, runs on any ST(E) or TT and is easy to use; it will print family trees, etc. Send large SAE for details or £17 for program. E G Richards, 2 Peckarmans Wood, London SE26 6RX.

Educational Adventures

For ages 5-13. 88% in ST Format. £12 each. 50p per disk for demo's. CVS, 18 Nelson Close, Teignmouth, TQ13 9NH. Tel: (0626) 779695.

RAE Morse Test

Selectable letter/number groups, thinking time, note pitch, morse generation from keyboard for CQ; plus save to disk, etc. Instruction manual and disk and SAE for more details. R. L. Tuft, 62 Admirals Court, Thirsk, North Yorks, YO7 1RR. Telephone: 0845-525082.

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Atari Hyperchart £65 (Cost £135), Syntex OCR £70, Pagestream 2.1 £65, Pagestream 1.82 £25 (no manual), Avant Vektor £150, Easy Draw 2 £15, 13 Start Mags + 16 Disks £25, 57 ST User Mags (4 binders) from Issue 2 1987 £30 + pp. Phone Mark on 081-399-5130 (day) or 081-395-2234 (eves). (31)

Timeworks DTP V1.2 £15, Fontkit Plus 3 £5, C Font £3, HiSoft Forth £5, Neodesk 2 £4, All original disks, manuals, boxes. p+p £1 per purchaser. Bob Willcox 0225-468385 office hours only. (31)

Supra 45 Megabyte Hard Drive £95, HiSoft Power Basic £15, HiSoft Devpac ST £15, Personel Finance Manager £10. Tel 0455-230186. (31)

1040 STE with 4 Meg Ram £250, SM124 £50, SC1224 £50, Lots of software + manuals (1st Word Plus, K Spread 3, Superbase Personal, Wordup, Quick ST 3.0), PD Discs £150. The lot for £450. Phone Robin (0602) 507999 - Evenings. (32)

Atari 1040 STE Family Curriculum Pack, Panasonic Colour Printer, Colour TV, Second Disk Drive, Mouse & Joystick, Over 150 Disks. Only one year old - Mr Moore 0202 672316 (Poole) £550 ono. (31)

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Gemulator - new and in original packing with latest software. Use Atari software on your PC! £120 - Reg Williamson, 67 Galleys Bank, Kidsgrove, Staffs, ST7 4DE - Tel 0782 782419. (31)

Lattice C V5.06 Compiler - £65, Devpac V2.21 - £25, Wercs - £9, HiSoft C Interpreter V2 - £20, K-Spread 4 - £65, Frontier Clock Card - £9, MasterSound 2 sampler - £10, Games: Sensible Soccer - £9, F19 Stealth - £9, Silent Service 2 - £9, Turrican, Kick Off 2, Speedball 2 - £5 each. Everything in mint condition. Tel Michael (091) 584 6284 after 6pm. (32)

Hard Drive 65 Mb £230, External Drive with Track Indicator £50, HiSoft Basic 2, Timeworks Publisher 2, Thats Write 2 £50 each - All Upgradeable. Other items also available. Phone for details or list - any offers considered. Call Aylesbury (0296) 81218. (32)

All original software. Fontkit Plus 3.4 £10, Kid Gloves, Bombuzal, Macadam Bumper, G-Nius, Mike Read's Pop Quiz, Mini Gold £3 each. Flipside (Othello), Space Station, Mouse Trap, Prince, Pro-Powerboat Simulator £2 each. Also new members required for South Devon User Group, Keith Harris, 0626-62271. (32)

Feeling Partner Auto/Accompaniment/Sequencing Software, Unused, Boxed with Manual, Blank Registration Card Etc, latest version. £100 ono. Cash Only. 071-488-6935 day. (32)

Vidi-ST Mono Video Digitiser. Good Condition with lead and manual - £55. Tel Roth (0709) 895707. (32)

Moneymarket - £12.50, MT2 - £5.50, Personal Finance Manager - £12.50, Games for sale or exchange:- Lemmings, Populous, Elite, Red Storm, Rising, Orbiter, Lslarry 111, Midwinter, Powermonger, Jet, Stunt Car, Starglider (1&2), Millennium 2.2, Kennedy Approach, Airball, Sentinel, RT Genesis, HF Red October, Bal. of Power 1990, F-15, Tank Attack, etc. Want F19, Civilisation etc. phone Paul on 0268-774089 after 2pm please. (32)

Lynex 16-bit stereo sampling system for ST. Powerful ST sampling system comes as 19" rack mount and plugs into ROM port. Dual TMS320 processors, 1M sample memory, 16 voice, 10 outputs, up to 50KHz sampling rate, can co-exist with some sequencers. Supports MIDI multisamples, crossfades, loops and envelopes. Built in digital mixer with graphic and parametric eq. Can also read Akai S900 disks, originally £2000, now only £350. Marcus 081 852 6662. (31)

Original IBM AT, dual 5.25" floppies, IM RAM, CGA card and screen, original IBM keyboard, hard disk controller (but no HD), serial/parallel i/f and DOS. Only £175 (or make me an offer) Marcus 081 852 6662. (31)

Cubase Atari (Latest) £200, Spectre 3.0 and Megaboard (Unused) £350. Dr. T's Copyist Level 2, V1.51, £50. Stan - 081 954 3118. (31)

Steinberg PRO 24 V3, Boxed with Security Key & Manual - £30. Phone Mark on 0274-670797. (31)

Silhouette, Autotracing Bit/Vector Graphics £35: Scan-Light, Hand Scanning ACC/PRG £12: Phone 0256 896879. (31)

Atari STM 1 Meg NO disk drive, works but fault on upgrade and mouse - so sold for spares, OFFERS around £45.00. Phone 081-767-4761 (London) almost anytime. (32)

19 inch Colour Multiscan Monitor believed to be VGA compatible, will work with Atari ST in Mono Resolution ONLY (NOT in Colour) Free to Callers ONLY, No guarantee. Very large and heavy needs two persons to lift! For info on above please phone 081-767-4761 (London) almost anytime. (32)

Publishing Partner £20 (No box); Digita Mailshot Plus £10; Digita System 3 (No box) £10; Digita Cashbook Controller and Final Accounts (No box) £15; Atari Productivity Software: ST Base £6; Hyperpaint £6; STOS £7; Games: Sim City, Turtles, Elite, Fighter Bomber - All 4 for £12. Postage Paid. 031-229-4566. (31)

Original Atari ST games for sale - Exile, Night Shift, Greg Normans Gold, Monkey Island, Lemmings, Space Ace, Falcon, Xenon 2, Corporation, E-Motion, Magnum 4, Gun Ship, Torvak, Chase HQ and Hard drivin'. The lot for £65, or will sell individually. Phone 0773 821776 for more details. (32)

Mega ST 4MB Ram, TOS 1.4, ICD Adspeed 16 Mhz, Titan Ext Power Supply, Mono Monitor, Naksha Mouse, Joystick, Boxed & VGC Plus scores of Discs £325. ICD Fast 52 MB Hard Disk + ICD Software, Cleanup, Diamond Backup and Edge, XBoot 3, Perfect £275. Phillips CM8852 Colour Monitor + Switchbox £80, HP DJ500 Printer Plus Colour Carts and Booster £200. Didot Prof Colour DTP Software £225 plus more. Phone Gavia 0602 817198. (31)

Notator SL - Complete and Unregistered £150 ono. Contact Paul 0709 813862 after 6.00 pm or will swap for Hard Disk in good condition. (31)

Easy Draw 2 (four disks) £25, GFA Draft with Manual £17, Degas Elite £10, The Sentinel (game) £5. 071 435 7664. (33)

Lattice C v5.51 Comprising 7 Disks and 5 Manuals £50, Highspeed Pascal £30, Deluxe Paint £10, Wercs £5, STOS Basic £5, All registered originals. Atari Books; Computes Atari ST TOS, Atari ST AES £5 each, ST Application Programming £5. Buyer Collects, 021 777 7302. Birmingham. (31)

Atari 520 STM, 2.5Mg Memory, IMg Internal Drive and TOS 1.4. £130: Phil-

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For the beginner and advanced user alike. Written by a practising teacher. Includes worked examples and Quick Reference Section, as well as a Guide Start pull-out. Partly covers That's Write 1.52 as well. Price £5 inc. p&p.

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CRITICAL MASS

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To receive further details about the above SHAREWARE software for the Atari ST range, please send an SAE or £1.50 for a copy on disk. To receive information about (and often copies of) new software and upgrades, why not register with Critical Mass for only £5.00?

Critical Mass Concepts, The Fishergate Centre, 4 Fishergate, YORK YO1 4AB

lips CM8833 Colour Monitor £75: Both excellent condition. Can provide some software if required. Phone Hodgson (0246) 418658 (Nr. Chesterfield). (31)

Spectre GCR, only six months old, hardly used – £225, That's Write V2 – £75, Datasound Sampler – £20 – Call 0275 375496 after 8pm or at weekends. Also First Word Plus 3.20 with Manual, No Box – £25. (31)

3–Way Data Switch Box with Cable – £15, Quick ST 3 – £8, Atari Mouse – £5, 1/2 Mb Frontier Xtra–Ram Upgrade – £25, Trackmaster Monitor Stand – £10, Printer Stand – £5, Miracle 2000 Modem – £15, 300+ Sprocket fed white labels – £4, Lure of the Temptress (no bug), Microprose Fl Grand Prix, Lemmings, Quartet – £10 each. Chess Champion 2175, Midwinter, TCB Tracker, Vvirus, Days of the Pharoe– £5 each. All boxed originals with manuals. – Address:– Alan Davies, 54 Bishops Road, Bury St.Edmunds, Suffolk IP33 1TQ. (31)

Calligrapher & Font Disks £30; PageStream 2.01 £25; K–Spread £25; LDW Power Spreadsheet £25; Pro–Data 1.02 £20; Hi–Soft Basic £25; Home Accounts 2 – £20; Timeworks DTP £20. All originals complete with manuals. Phone Kevin – 081–859–1614. (31)

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Is there a free version of an Ensoniq SQ–80 Editor/Voice Librarian? Call Dave:– Tel Newport (0633) 612187. (32)

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Your unwanted ST Software, Games, Applications etc. Anything considered at a realistic price. Must be boxed originals with manuals. Send list to Steve Aizlewood, 19 Brushfield Road, Holme Hall, Chesterfield, S40 4XF. (36)

Calamus Fonts & Clip Art: Sale or Swap – anything considered. Ring now: Andy 0532–430177. (34)

Has anyone got Manuals or copies for Epson GQ 3500 Lazer. i.e. Getting the most from..., Maintenance, Solving Problems and Ref Guide? Telephone: Hemel Hempstead (0442) 245705 Ask for Hadyn. (31)

Please contact me if you have any information about writing macros in K–Spread 4. I am trying to write macros that will assist a user completing invoice details. Chris McCarthy, 44 Collingwood Drive, Great Barr, Birmingham, West Midlands, B43 7NF. Phone: 021 360 9703. (31)

1 Mb Simms for STE. Phone Jonathan on 0222 757022 after 4pm. (32)

DynaCadd. Long term unemployed seeks working copy – not demo. Tel: John on 031 226 7092 evenings. (31)

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Software: Funface, Monkey Island, Lure of the Temptress (debugged version), Intro to word processing. Phone Steve on 0246 201263 (Chesterfield). (32)

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Contacts

I'm looking for contacts in England, Germany, France, US and other countries (I read, write and speak very well: English, French and of course Italian) about information on ST/E, TT and Falcon world, please write me (letters on disk are welcomed, Ist Word Plus, Redacteur 3 or ASCII). I'm interested in programming and DTP (mainly) graphic, PD, shareware and news about Atari World, Write to Mario Gardenghi, Via M. D'Azeglio 25, 40026 IMOLA (BO), Italy. (33)

Falcon contacts – have you got any Falcon demos or utilities, etc.? Andy, 0435 882121. (31)

Wanted: ST Contacts, swap PD etc. Write for a list. All letters answered. Dave Moss, 22 Beverley Close, Chessington, Surrey, KT9 2RL. (33)

Help

I have a Protar 100 DC Series II Hard Drive (System Software 4.1.2) and a 1040 STF. The drive Formats OK, but attempting to copy a large file from floppy to the drive results in 3, 4 or 11 bombs. Turbodos helps – I can copy files of up to around 50K. The conflict must be with TOS 1.2. Can any one help? Protar and Cambridge Business Software don't answer my letters. Contact me on Internet Emeli c/o Panther & Carla Dist.Unige.It, or write to Clyde Meli, 36 Ta'xbiex Terrace, Ta'xbiex, Malta.

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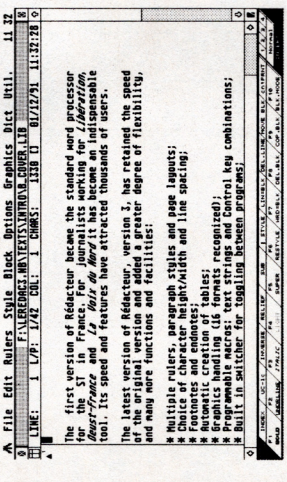

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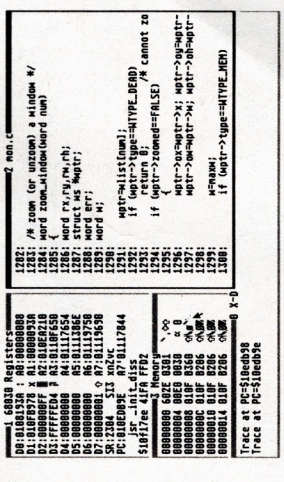

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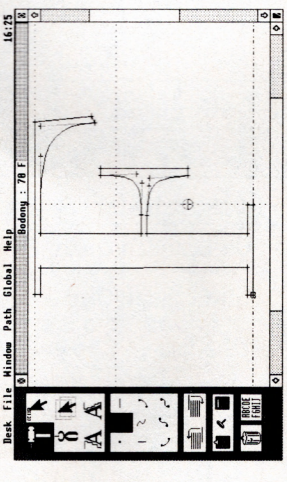

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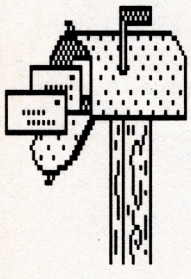

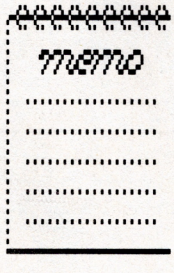

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